SOUTHERN NAUTICS & AVIATION

July, 1945 25 cents

Flight

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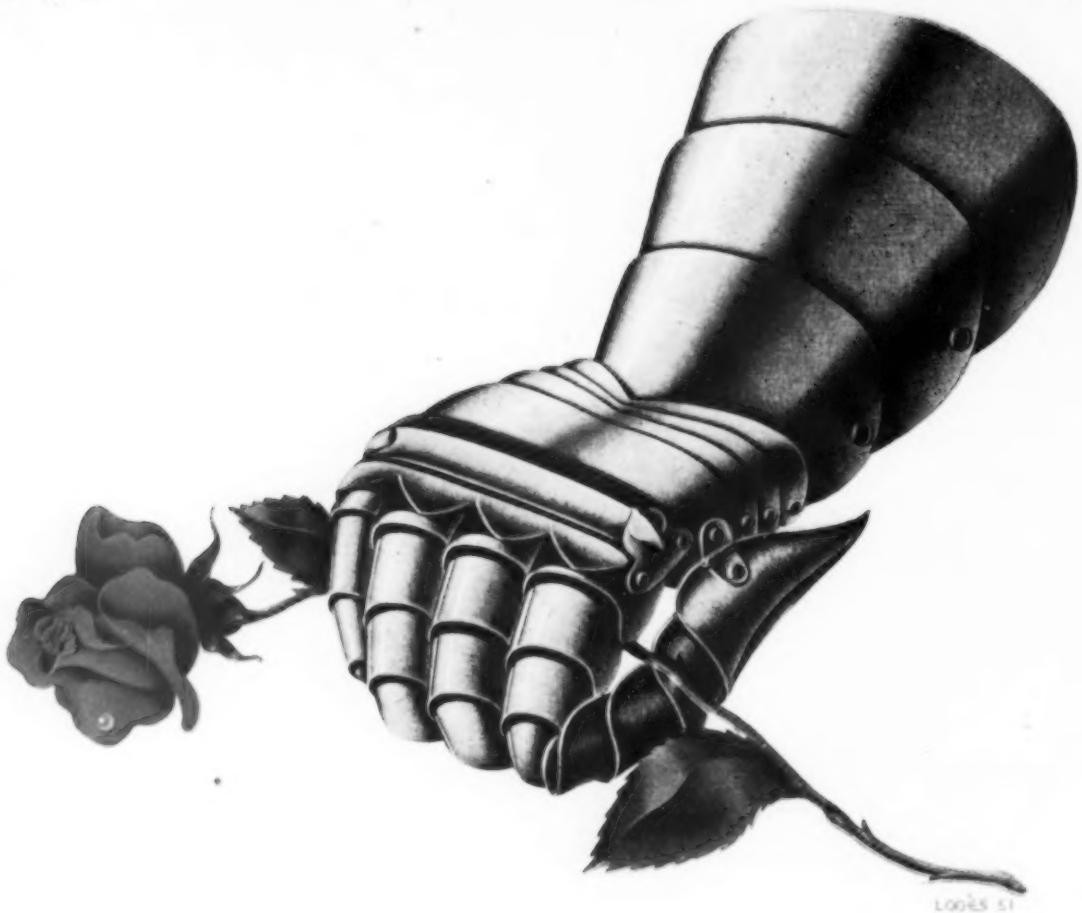
More than ten thousand Vought Corsairs —fastest shipboard fighters in the world— have rolled off the production lines—over 60% at Chance Vought, 30% at Goodyear and the balance at Brewster. Operating as fighters, fighter-bombers and night fighters, they are playing a vital role in Navy task force attacks on Japan.

CHANCE VOUGHT AIRCRAFT

STRATFORD, CONNECTICUT

ONE OF THE FOUR DIVISIONS OF UNITED AIRCRAFT CORPORATION

JUL 16 1945



"A rose... by any other name...

As one William Shakespeare so aptly limned... Is still the same sweet flower.

And while we concede... that it's a far cry

from the immortal bard to modern aerial combat, our point is just the same...

For the P-47* is the same sweet ship by any other name.

Thunderbolt... Superbolt... Thunderbomber... Black Death...

and from one enthusiastic pilot, the significant appellation "Frank Buck" serves

to emphasize the fact, that here is a plane

which not only performs its varied operational demands, but has established, as well,

a most enviable reputation for "Bringing 'em back alive."

Combat pilots who have flown all types of Fighter Planes are unstinting in their praise of Thunderbolt versatility.

REPUBLIC AVIATION

CORPORATION

Farmingdale, L. I., N.Y. — *Makers of the Mighty Thunderbolt* — *Evansville, Ind.*

Revving Up

READ AND REMEMBER: Nine major changes in the Civil Air Regulations affecting private flying went into effect on July 1. They include:

Physical examinations may be given by any registered physician, who uses a simple form available from CAA (this went into effect on June 1).

The minimum age for a private pilot's certificate has been dropped from eighteen to seventeen.

Aeronautical knowledge requirements have been changed to eliminate examinations in Meteorology, Navigation and General Service. Written examinations will cover only Air Traffic Rules and a new part called General Operation Rules, which are a group of miscellaneous requirements covering certification and maintenance of aircraft, equipment and instruments, general piloting rules and privileges and limitations of various grades of pilot certificates.

Aeronautical experience required is not less than ten hours of dual instruction on conventional aircraft, of which at least two hours must be after solo, and thirty hours of solo to get the license. Seven hours of dual instruction on the "safety" type of airplane, of which two must be after solo, and twenty hours of solo time. In each of these cases cross-country time has been dropped to three hours.

Spirals have been eliminated from flight tests for a private certificate. The applicant is required to do three figure eights, with the plane moderately banked, and the angle in the 720-degree power turn has been changed from sixty to forty-five degrees. The test no longer includes simulated forced landings, and several co-ordination exercises have been eliminated with climbing and gliding turns at minimum controllable speeds added.

Instruction may be given by any pilot, but only a commercial pilot may charge for the service. However, the private or commercial pilot who does not hold an instructor rating may not authorize a student to solo, nor does his instruction reduce the amount of instruction required by rated instructors.

Log books need now contain only sufficient entries to substantiate recent experience requirements or requirements for changes in ratings. Previously every flight was supposed to be logged.

Power ratings have been eliminated. Hereafter no pilot shall carry passengers unless within the preceding ninety days he has made at least five takeoffs and landings in an aircraft of rated horsepower within 50 per cent of that of the aircraft to be flown. A pilot may fly solo any aircraft of any horsepower.

Reckless flying has been lumped in one big prohibition. Previously the regulations listed specific maneuvers that were prohibited. Now the rules say "no person shall operate an aircraft in a careless or reckless manner so as to endanger the life or property of another." This gives those who must administer the regulations wide latitude in dealing with the pilot who disobeys the laws of decency and commonsense in flying.

Provisions of new Part 60 of the Civil Air

(Continued on page 24)

SOUTHERN
Flight
Including MODERN AIRPORTS

Twelfth Year of Progress With Aviation

JULY, 1945 VOL. XXIV, NO. 1

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The world's most powerful propeller-driven fighter is the Navy's new twin-engine, tricycle F7F. Note size of big 2,100-hp. Pratt & Whitney engines compared with pointed fuselage, stubby wings. This one is a two-seater night fighter version called F7F-2(N)
—(U. S. Navy Photo.)

New carrier performance standards are being set for the Navy's first twin-engine fighter. It can also be used as torpedo bomber.

Grumman F7F Tigercat

THE Grumman F7F Tigercat, the Navy's first twin-engine fighter, is now in the hands of Marine squadrons, ready for action in the Pacific. Disclosure last month of some of the details of the new plane gives some idea of what may be expected from it during the coming months.

Not only is the Tigercat the Navy's first twin-engine fighter, it also has the most powerful engines ever used on a Navy plane. They are the Pratt & Whitney 2800-C Double Wasp engines, which are rated at 2,100 horsepower for take-off.

The famous single-engine Grumman Hellcat and Vought Corsair, until now the most powerful Navy fighters in the Pacific, have both been powered by the 2800-B engine, rated at 2,000 horsepower. Thus the Tigercat is more than twice as powerful as any previous Navy fighter. Moreover, like the Hellcat and Corsair, it can increase its power very considerably for short emergency periods by the use of water injection.

The combination of this high horsepower and Grumman design has made the Tigercat the Navy's fastest climbing plane. It can go up after the enemy at a mile-a-minute clip. This should prove a particularly great asset to Tigercat pilots when flying escort missions by enabling them to intercept enemy attacks early.

At its critical altitude the Tigercat is listed as "in the 425-mph. class," and at sea level it is said to be faster than anything the Japs have. This high speed at low altitudes means that on the defense the Tigercat has a vital advantage in breaking up the low-level sneak attacks so often used by the enemy. On the offense it can get away safely after destroying enemy supply lines and troop concentrations.

Almost half again as large as the Hellcat, the Tigercat has more firepower than either the Hellcat or Corsair and can carry 4,000 pounds of bombs or a full-size marine torpedo. Rockets are provided for, and drop tanks extend its range considerably. Exceptional maneuverability is claimed.

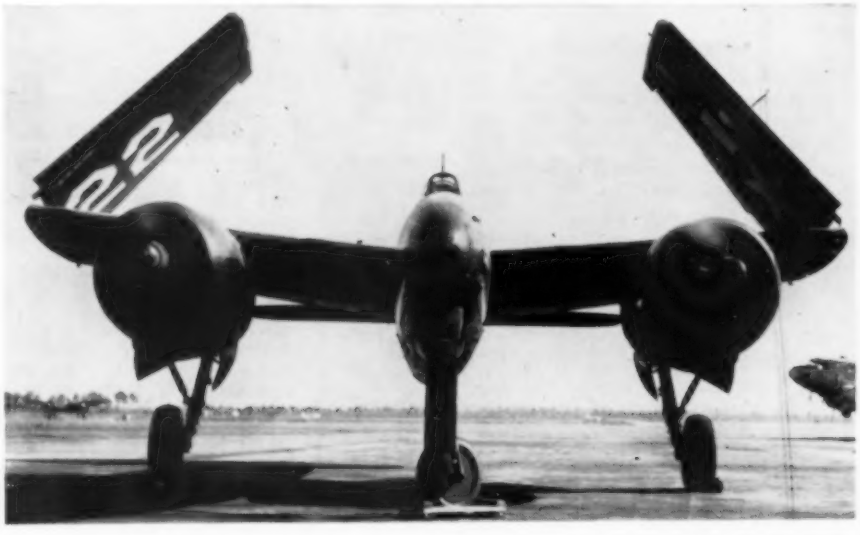
For the time being it is used exclusively for land-based operations, but the Navy says the new 45,000-ton Midway class carriers will make ideal bases for the Tigercat.

As a fighter bomber, in close support operations ahead of advancing Marine ground troops, the Tigercat can smash enemy strong points with two tons of destruction at 400 miles an hour.

As a torpedo bomber, it can carry the same size torpedo as the Avenger and carry it 100 miles an hour faster as well as for a greater distance. Furthermore, after delivering the torpedo attack, it can take over the job of knocking down enemy aircraft and giving protection to other attacking bombers. If necessary, it can come home on one engine.

For night fighting, a special version of the Tigercat has been developed. This is a two-place model, the F7F-2(N), which is equipped with electronic devices to seek out the enemy in the dark. ★ ★ ★

Clean lines of Tigercat is emphasized by this head-on view of fighter with outer wing panels folded for carrier operation. Now used from land bases, it is intended for 45,000-ton carriers. —(U. S. Navy Photo.)



Devastating as have been the recent bombings of Japan, they are only a mild foretaste of what is to come. 5000 tons a day will soon be rocking Hirohito's island empire, blasting the last remnants of Japanese resistance. Fully half of these bombs had their beginnings in Texas. Humble's Baytown Ordnance Works was the first plant in the world to produce synthetic toluene for TNT and since Pearl Harbor it has produced the toluene for *one out of every two* United Nations bombs.

From Texas to Tokyo—*With Our Compliments*

Toluene is but one of many Humble petroleum products serving wartime aviation. Humble-Esso Aviation products that have helped make Allied air supremacy a fact will lead the way to new standards of performance in commercial and private planes of post-war days.

ESSO

Humble-Esso Aviation Products

Today Humble-Esso Aviation Products serve the vital demands of war; tomorrow they will serve equally well the needs of peace.

HUMBLE OIL & REFINING CO.

BEFORE AND AFTER a B-29 "visit" to the Nakajima Aircraft plant at Ota, Japan. 755,900 square feet of roof lies gutted and blasted. Official Photo U.S.A.A.F.

LOST--

1 Aircraft Plant
105,226,101 Faces

Losing face — and losing war plants — is a regular Japanese custom these days. It is a habit they don't particularly relish, but they don't seem to be able to do anything about it.

For there isn't much argument you can put up against a fleet of, say, 50 B-29's. They go where they wish, when they wish, hit what they're aiming at. And they come back again and again.

As the size and power of these Superfortress fleets increase, so does the responsibility of all Chandler-Evans workers. For an integral part of the great Wright engines that power these bombers are CECO carburetors. They are part of the great team of parts that go into the making of a Boeing B-29. They must function perfectly and efficiently regardless of altitude or temperature. Above all, they must be dependable.

We pledge that no single thing will be overlooked to maintain, and better, the high standards that have earned CECO carburetors this responsibility.

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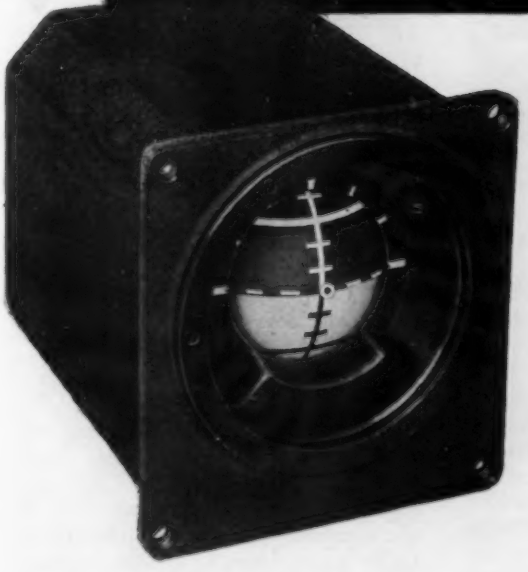

Now, for the first time, the pilot knows the attitude of his plane continuously, at any flight angle, regardless of visibility or extreme turbulence.

An electrically driven gyro stabilizes a sphere which is universally mounted—without limit stops—allowing full 360 degrees freedom of indication about the roll and pitch axes of the airplane. (The airplane actually maneuvers around the indicating sphere.) No caging is needed!

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JUST AMONG OURSELVES

Editorials and Comment

THE NEW REGULATIONS

MANY old-timers predict that the newly revised Parts 20, 43 and 60 of the Civil Air Regulations, which go into effect July 1, might prove a boomerang to aviation growth and progress. Anticipating a wave of fatal accidents unprecedented in recent aviation history, they eye the revisions as a bad case of letting down the fences to such an extent that thousands of incompetent and inadequately trained pilots will clutter up the airspace and kill a lot of people.

This widespread pessimistic opinion is not without logical foundation, especially if certain major principles of effective law enforcement are neglected. But time alone will tell; and while the statistics are being compiled, it might be wise to sit down and soberly consider some significant aspects of the revised regulations and what new responsibilities they place on various categories of non-scheduled flying personnel.

While the new regulations place the monkey squarely on the back of every one engaged in civil aviation, enough bite has been written into the law so that people who now engage in reckless flying, endangering the lives or property of others, can be prosecuted rapidly and effectively. Instead of listing a hundred and one specific prohibitions like the old CAR, the new regulations say in effect, "Thou shalt not fly recklessly," period.

In our opinion the success or failure of the revised regulations and their overall effect on air safety and on the future of civil aviation depends entirely on just how tough Uncle Sam gets with clear-cut cases of violation. There's a lot of latitude in that one simple prohibtion of reckless flying and no doubt there will be some colorful arguments as to what constitutes a violation. But the nature of enforcement is the important factor.

Frankly, we've seen enough of the old ludicrous system whereby a violator is found guilty by a CAA inspector, given the bad news by the Federal attorney who then settles a thousand dollar fine for twenty-five bucks. We trust this travesty will end.

Everybody now knows that all the regulation in the world won't give us an enviable safety record. Heretofore it has been practically impossible to fly cross country without breaking one or more regulations. So by lumping all reckless flying into one simple prohibition and by means of firm and sensible enforcement of that regulation, it should be relatively simple to keep the situation under control. If the Federal agency fails in this, you might as well write it down in your book that local and state authorities will get into the business of law enforcement.

From the standpoint of people who participate, aviation is no different from any other human pursuit. We have our nit-wits, our share of the duffies, the careless and the potential criminals. The public will demand, and get, protection from these elements. Our big job in aviation is to put more emphasis on training and education and less on regulations that will never be enforced.

Don't let anyone tell you differently —millions of people are still afraid to fly. They are still sensitive to an occasional fatal airplane accident while the automobile buries some 30,000 people annually. That's one important reason why the matter of aviation safety cannot be disregarded in any appraisal of factors determining the health and growth of the industry.

While the new regulations place a serious individual responsibility on every airman, including the airplane owner who must not permit incompetents to fly his craft, perhaps the heaviest load is on the back of the certificated instructor. His is the responsibility of taking no one's word for anything and to find out to his own satisfaction the capabilities and limitations of every student, kiwi or advanced. Laxity and irresponsibility on the part of instructors or airport service operators will contribute more to the accident rate than any other one factor. Here again enforcement will bear directly on the safety figures for provision has been made to deal severely with such matters as approving a student for solo or cross country who isn't properly qualified and for operating unairworthy airplanes.

With accelerated activity in non-scheduled flying it will be impossible for the already under-staffed and overworked CAA field personnel individually to check every airplane and rate every pilot. Consequently, we will see the immediate appointment of hundreds of flight examiners and aircraft inspection representatives throughout the nation. This system was first employed during the Civilian Pilot Training Program days and worked very effectively. If the CAA maintains rigid standards for flight instructors and properly supervise their work, then any flight instructor should be qualified to judge the proficiency of an applicant for a private pilot certificate. The same holds true in the case of a competent mechanic whose character and ability are well known and whose judgment can be followed in the matter of aircraft airworthiness.

We are confident that CAA field personnel can establish and intelligently operate such a system to the everlasting good of non-scheduled aviation. We don't believe civil aviation can go on much longer under the centralized control of the Washington offices in the Commerce building, especially if we have as much flying activity as now appears logical to expect. The new regulations might force a long hoped-for decentralization of the entire CAA operation. Washington doesn't know it but the field organization should be telling them what to do rather than Washington dictating to the field. This fact will have to be faced when the new regulations go into effect. Otherwise, we will have pandemonium and a lot of busted necks. If the men in the field aren't given more power and freedom of action, and if their decisions are not backed up by their organizational superiors in Washington, God help us. Once the political loop-holes are located and utilized by the law-breakers (the type who gets his Congressman to take off the heat by a telephone call to the Commerce Department), all hell will break loose and the fences will be down.

We firmly believe the average person now engaged in non-scheduled flying will shoulder all the new responsibilities imposed by the revised regulations. We are confident CAA men in the field, in daily contact with all the segments that make up this potentially great branch of the aviation family, also will accept the new order and work unceasingly for safe operations and unrestricted growth of private flying. If Washington does likewise, there isn't any cause for worrying about letting the bars down so that more people will learn to fly and some day maybe buy airplanes.

worth waiting for NEWS

No. 7 - HOW HIGH IS UP?

THE SEVENTH OF A SERIES OF INFORMATIVE ADVERTISEMENTS ABOUT THE NEW CULVER.
PUBLISHED BY THE CULVER AIRCRAFT CORPORATION, WICHITA 1, KANSAS

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HOW HIGH IS UP?

RECENTLY a designer, when asked what the gas capacity of an airplane should be, adroitly remarked, "An airplane should carry enough gas so it will always have an hour's reserve supply in the tank."

Which is much like posing the question, "How long is a piece of string?" "How deep is a hole?" or "How high is up?"

Many surveys have been made in recent months asking the desired cruising range for the postwar airplane. Answers have ranged all the way from 400 to 600 miles. Culver's design purpose is to build, fundamentally, a ship which has utility; and, as we see it, a ship which has utility must be a cross-country airplane with ample cruising range. What is ample range? As we see it, ample range means the ability of the airplane to travel long distances, to be able to skirt weather without fear of running out of gas, and to cut gas stops on cross-country trips to an absolute minimum, in order to answer Culver's basic purpose of getting you somewhere faster and cheaper than by any other mode of transportation. As someone facetiously put it, "The cruising range of an airplane must exceed the rest room range of the pilot." The prewar Culver had a cruising range of 480 miles. This wasn't enough. You may expect, in the New Culver, a cruising range that will be vastly in excess of the 480-mile cruising range of the original Culver.

Add to the ample cruising range of the New Culver such features as the electrical retractable tricycle gear, soundly engineered construction, the low-wing plastic bonded wood constructed monoplane incorporating the three S's of aviation, safety, simplicity (simplified control), and speed, with Culver's built-in performance and economy of operation, plus Culver dealers one-stop service station policy, and it all adds up to a new era in flying for the personal pilot. That New Culver and that new era are definitely Worth Waiting For!

FOR THE LATEST INFORMATION WRITE CULVER AIRCRAFT CORP., DEPT. SFG, WICHITA 1, KANSAS

TEXAS GETS A LAW

WHILE many states are either contemplating or passing restrictive aviation legislation, it is refreshing to read the Aeronautics Act passed last month by the Texas legislature. The new law, only aviation legislation ever enacted by Texas solons, goes into effect September 4. It establishes a non-paid, non-political aeronautics commission of three men who in turn appoint a full-time, salaried director. The director is furnished an engineer, a statistician and auditor, a secretary and an expense account, with adequate provision for seasonal help should it be needed. Total annual appropriation is approximately $20,000.

The Act avoids safety and economic regulations and imposes no fees or taxes. Although Texas has long collected a 4c per gallon tax on aviation fuel, it is returned to the purchaser under a non-highway usage law. The Act specifically declares the new agency will work for the promotion and development of aeronautics within the state, will co-operate with the U. S. authorities in the development of a national system of airports and will co-ordinate its activities with those of the Federal authorities "eliminating costly and unnecessary duplication of functions properly in the province of the Federal agencies."

It wisely states that "the Commission shall have no authority to issue certificates of convenience and necessity within the State of Texas." Inclusion of this provision reveals that Texas doesn't intend to "balkanize" air transportation and that its lawmakers realize a state should not attempt to erect a fence around the airplane at the borders, as has been the case of legislation pertaining to surface carriers.

Other states now considering state aviation legislation might well study the new Texas law. The principal provisions were drafted and sponsored by Texas airmen representing every branch of the industry after they had been advised of the desire of many legislators to enact some type of aviation legislation during the 1944-1945 session.

We look upon the method used in Texas as a classic example of the democratic process working effectively for the encouragement of industry and new business ventures instead of for the regulation and restriction of commercial enterprise, which has been more or less chronic during the last decade not only in the several states but in the Federal government as well. The Texas legislature realizes that if Texas is to maintain her pre-eminent position as the most active aviation state in the nation, all possible encouragement must be provided, especially during the transitional months ahead.

The new Aeronautics Act proves that Texas intends to help develop a relatively new industry which is potentially capable of absorbing thousands of World War II veterans in the field of scheduled air transport, manufacturing, airport operations or as small business men of aviation in the broad and fertile non-scheduled field. Too many states are neglecting or are absolutely oblivious to the employment implications of postwar aviation. As a consequence they are actually shutting the door of opportunity to their men off fighting the war.

Texas airmen are unanimous in praise of their legislators and their governor for creating sympathetic, progressive aviation legislation. And it is mighty reassuring to learn that at least one state looks upon the airplane as a new source of employment and industrial wealth which will contribute materially to the welfare of all the people and to the social, economic and industrial growth of the state. It represents refreshing relief from those states who look upon aviation as a rich source of new taxes or as an opportunity to create new bureaus for the purpose of dishing out juicy jobs to political parasites, duplicating the functions adequately and constitutionally carried on by the Federal government.

VICTORY THROUGH RESEARCH

NEARLY every participant and qualified observer in World War II sometime or other has witnessed the performance of miracles which has meant the difference between victory and defeat. Some of them were in battle on the combat front, but many were in our research laboratories or on the production line. Added up, these miracles provide the reason why we're not now learning to speak the German language or adapting our form of government to Fascism.

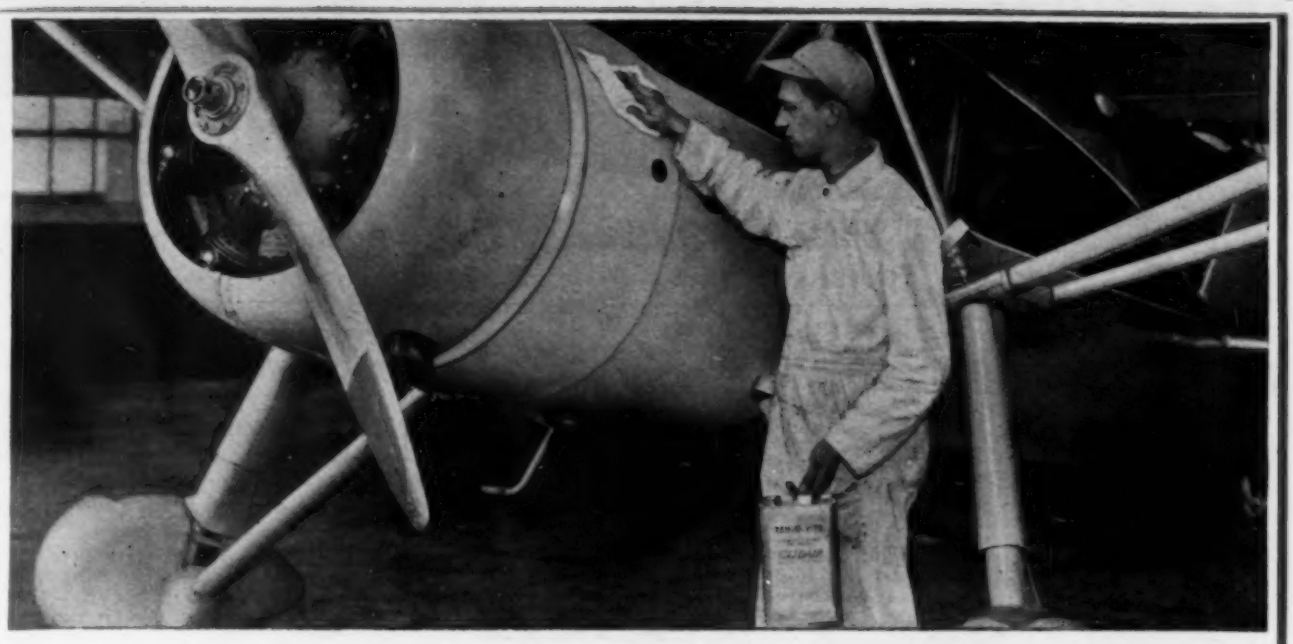
Last month a group of accredited aviation writers were invited to Cleveland to visit the National Advisory Committee for Aeronautics aircraft engine research laboratory, where there is plenty of evidence why the United States is listed in the winning column. Heretofore carefully guarded from the public and the press for security reasons, the busy and efficient experimental chambers of the NACA laboratories, under the capable direction of some of the most brilliant engineers available, have been quietly working away on solutions to problems that have blocked the road to victory. One of the truly great, unpublicized miracles of the war has been performed by the National Advisory Committee for Aeronautics, not only at Cleveland, but at Langley and Moffett installations as well. Some day the full story will be told.

The people of the Allied nations who have been on the inside track of this war shudder at the memory of the times we approached the brink of disaster before the Hitlerites were beaten into submission. These men know our doom would have been sealed long ago had it not been for our engineers and their tireless research. So during all this talk about compulsory military training, let us remember that all the military training in the world will be valueless unless it is backed up by adequate research facilities staffed by the best engineering talent available.

One of the great lessons of this war emphasizes the value of aviation research. America was a fifth-rate air power when the war started. Only by the most diligent production and the most thorough research did America catch up with and surpass enemy nations which had planned their war-making for years. Next time we won't have the time to "catch up." Maintenance of adequate aeronautical research is a challenge we can not avoid in the future.

A visit to the NACA Cleveland laboratories convinces us that every member of Congress and the Bureau of the Budget should see what is being accomplished in jet propulsion, rockets, gas turbines, improved fuels, metallurgy and in whipping all the complex problems of conventional equipment as well as those now being generated in the mysterious realm of supersonic speeds. If such a trip could be arranged, you can bet your bottom dollar the Congressmen and the budgeteers would never again jeopardize the security of this nation through lack of funds for adequate research facilities. They might even take along some representatives of Jap intelligence, who could transmit to Tokyo what's coming their way so they can emulate Adolph and throw in the sponge.

★ ★ ★



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Try Ren-O-Vite on pigmented dope, lacquer and synthetic enamel surfaces. See for yourself how this top quality cleaner and polish removes the cloudy film of dead material on top and gives the solid finish beneath a lasting shine.

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By *Major Al Williams*, ALIAS, "TATTERED WING TIPS"
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WE DIDN'T BELIEVE THEM, EITHER.

But we checked again and again, and these things are true:

In the summer of 1940, the American military used less than 10,000 barrels of 100-octane fuel per day. The Petroleum Industry is now furnishing 500,000 barrels of 100-octane-or-better-fuel every day! Most of it is coming from plants that didn't even exist in 1940. Plants which the industry spent more than $900,000,000 to build.

Despite handicaps of man power, material, and price structures, crude oil production in the U.S. has been increased 20% in the last 4 years!

We have shipped as high as 600 *million* gallons of gasoline and oil in one month to our overseas fighters!

It takes 156 tanker sailings per month to carry that much petroleum!

Things like these make us pretty proud of the outfit we work for.

Proud of the whole darn Petroleum Industry, in fact.

DAMAGE CONTROL—2 Versions

If you've ever seen an A-26 souping along, you must have figured that the gents who could design and build such a plane would be a shrewd group of laddies. You were right.

Here's additional proof:

They set up a department called "Damage Control," which is responsible for removing elements of danger from the plant. One of their principal functions is putting signs on anything which is a conceivable source of danger, or anything which could be *en*dangered by improper handling or carelessness.

The "silent alarm" of a sign stating that "THIS PANEL REPRESENTS APPROXIMATELY $8,000—TREAT IT ACCORDINGLY" is one of the devices which has helped these boys build one of the best damage-control records in the industry.

Gulf has an additional refining step called the "Alchlor Process" which is responsible for removing elements of danger from Gulfpride Oil. One of its principal functions is extracting conceivable

sources of danger to your engine—the carbon-making and sludge-forming hydrocarbons which break down quickly, causing trouble.

The Alchlor Process is just one of the "extras" which has given Gulf its present stature in the Aviation field.

An "extra" which gives your engine extra stature when you use Gulfpride, too!

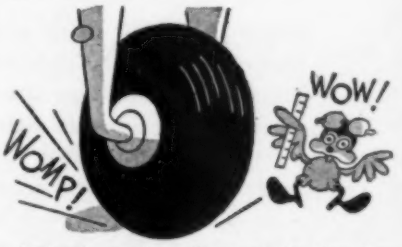
LITTLE KNOWN FACTS ABOUT WELL KNOWN PLANES:

Here are this month's curious, fascinating, and well-nigh incomprehensible facts about our pet subject. Each of the following contributors becomes that exalted being known as a Perch Pilot (br). And each of them can be promoted to the supreme rarification of Senior Perch Pilot with only 4 more L.K.F.A.W.K.P.—good enough to print, and accompanied by proof!

Roger B. Rollin, 945 Norwich Ave., Pittsburgh 26, Pa.—who lives so close he can probably hear us holler at Flutter—says:

"A version of the P-38 has a glass nose, bombardier, bombsight, and a 4000-pound bomb tucked into its offensive armament!"

George Duvall, of Consolidated Vultee—Elizabeth City, N.C., has this to say about the "Model 37:"



"The footprint of one main tire during landing impact is approximately 10 sq. feet . . . the wing tips may flex as much as 6 feet in gusts . . . the props are higher than a 2-story home!"

And E. E. Lothrop, Curtiss-Wright, Bloomfield, N.J., is welcomed to our exclusive group for:

"A C-46 towed a glider 1320 miles from Karachi, India, to near Calcutta, in 7 hours, 45 minutes—longest glider flight on record!"

How about you? Know any Little Known Facts? Send 'em in!

Gulf Oil Corporation and Gulf Refining Company...makers of

GULF **GULF AVIATION PRODUCTS**

OIL IS AMMUNITION—USE IT WISELY

Commando

CHOSEN STANDARD TROOP CARRIER . . .

Long famed for their prodigious work as Himalayan "Hump Run" haulers, C-46 Commandos have been chosen the standard aircraft of the Troop Carrier Command. In their initial action, they precipitated paratroopers onto the German plain in the first Allied aerial crossing of the Rhine.

LONG RANGE— DOUBLE FIGHTING PUNCH

With an 1800 mile range and 36 paratrooper capacity, Commandos revolutionized airborne operations by doubling the fire and fighting power any previous American transport ever carried into action.

DOUBLE JUMP DOORS

New, double paratrooper doors on the C-46 enable simultaneous unloading from both sides of the plane. More troops can be spilled into a smaller area, can more quickly assemble in strength for strong surprise land attacks.

REPLACEMENTS BEING C-46 TRAINED

All future troop carrier replacements will be trained for C-46 Commando operations. Transition training has already been given units overseas. This world's largest and fastest twin-engine transport is destined to play a part of increasing importance in America's expanding aerial warfare.

CAN TOW GLIDERS

Its ability to tow all types of gliders from the CG-4 to the newest, largest CG-70 "Trojan Horse", plus its greater power and range make the Commando ideally practical for the longer reaches of the Pacific war theater where the C-46 is destined to see plenty of action.

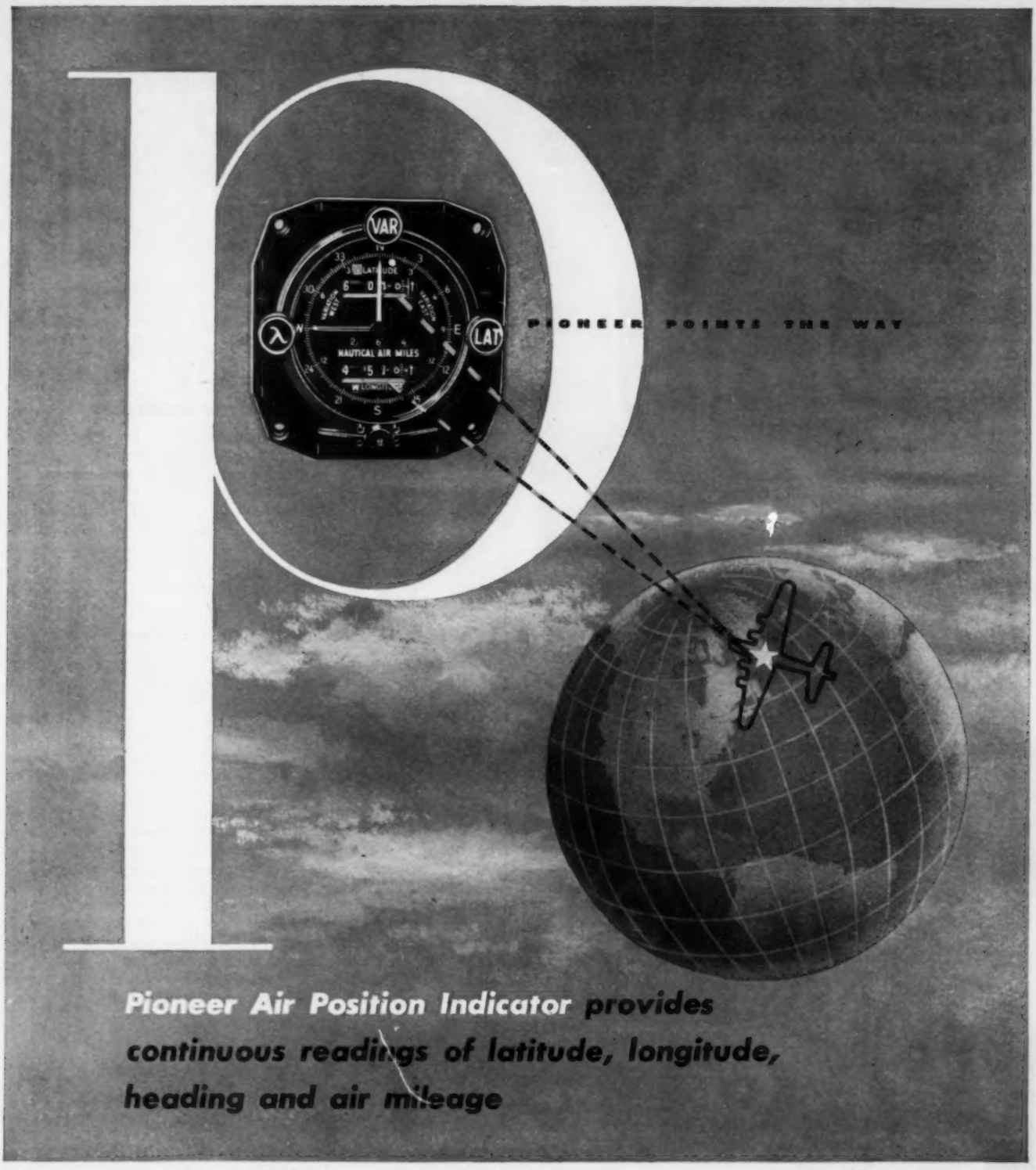
CURTISS AIRPLANES
DIVISION OF
CURTISS-WRIGHT
FIRST IN FLIGHT

Printed in U. S. A.

U. S. Navy's Grumman Hellcats "On Target"

Grumman

AIRCRAFT ENGINEERING CORPORATION, Bethpage, L. I., N. Y.



Orientation mechanically has now become a fact! Today a pilot or navigator can read directly from a dial his exact position in relation to the air mass through which he travels. With only a simple correction for drift he can establish, *with accuracy*, his geographical position as well. The instrument which makes this possible could only have come from Pioneer*, for the proper functioning of the Air Position Indicator depends in large part on true heading indications—and these in turn can be provided under all conditions only by the Pioneer-created Gyro Flux Gate* Compass. Again Pioneer's Creative Engineering points the way to greater flight security.

PRODUCTS OF Bendix AVIATION CORPORATION

PIONEER INSTRUMENTS

ECLIPSE-PIONEER DIVISION Teterboro, N. J.

*REG. U. S. PAT. OFF.

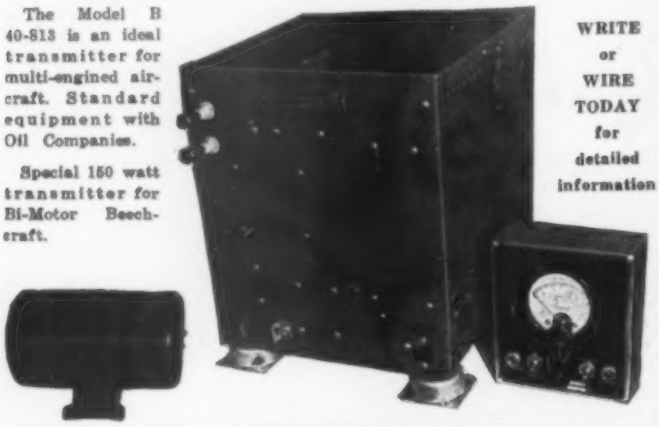
3 Popular Models of the ★★★ WALLER COMMUNICATOR LINE

- **Model AB39, Power 20 watts, 20 lbs., 2 Frequencies $437.50**
- **Model AB39-814, Power 50 watts, 32 lbs., 2 Frequencies $687.50**
- **Model B40-813, Power 150 watts, 62 lbs., 2 Frequencies $1400.00**

Also a complete line of two-way radio combinations for light airplanes. Expertly engineered and built to the most efficient performance standards.

The Model B 40-813 is an ideal transmitter for multi-engined aircraft. Standard equipment with Oil Companies.

Special 150 watt transmitter for Bi-Motor Beechcraft.



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SPARTAN RADIO LABORATORIES

Dept. SF 75
MUNICIPAL AIRPORT

TULSA, OKLA.

AMERICA'S PIONEER DISTRIBUTORS

FROM OUR USED PARTS DEPARTMENT

For many years now, we have maintained our reconditioning department just to offer guaranteed reconditioned used parts at a great saving to you. Below you will find our—

SPECIALS FOR JULY

SPECIAL PRICES WRIGHT J5 PARTS RECONDITIONED

13914	Cam	$ 20.00
13534	Crank case	100.00
40279	Nose section	40.00
13538	Tappet section	15.00
40211	Rear section	20.00
40298	Crankshaft	100.00
50023	Cylinders, set of 9 with valves and rockers, pistons, new rings (.015) complete	$200.00
13488	Intake manifold	20.00
13364	Link rods	2.00
40267	Master rod only	20.00
21427	Valve exhaust	5.00
19378	Valve intake	3.00

BG-4B2-S Spark plug, new 1.50

Preformed tinned aircraft cable 1/16, 3/32, 3/16, priced low. Write for quotation Box SF7.

AIR-PARTS INC.

723 SONORA AVENUE — GLENDALE 1, CALIFORNIA

AIR REPORT

☆ SIGNIFICANT TRENDS IN THE NEWS

How Many?

Watch the constant increase in the number of certificated airmen and student pilots. As of June 1, there were 125,000 active certificated pilots and 189,000 certificated student pilots, a total of 314,000.

Estimates of the number of Army pilots (160,000) and Navy and Marine Corps (47,000) provide a total for the military services of 207,000.

As for certificated airplanes there are now 29,599 privately owned ships, 338 domestic airliners, 81 U. S. foreign service airliners or a total of 30,018. An additional 60 aircraft have been released by the military for conversion to airline equipment.

★ ★ ★

Regulation of Charter Operations

Charter flight operators can expect to be regulated by the Civil Aeronautics Board in the near future. Although there is some talk of economic regulation and studies are being made in this department, most of the action will take place in regard to safety measures. Multi-engine equipment will be required for night and instrument operations and pilots will have to show adequate experience on the type of equipment they fly. The day of *laissez-faire* in charter operations is rapidly drawing to a close.

★ ★ ★

Erratic Market for Used Planes

If you've watched the used plane market during the past six weeks you have seen it rise, fall and then rise again. Factors behind the fluctuation probably include:

The large number of twin-engine Cessna UC-78's being converted to executive transports, knocking the price out of the higher priced single engine jobs; publicity of optimistic predictions of new plane production which dropped the price on lower priced light planes.

The drop didn't last and the market has recovered largely due to (1) the present transportation crisis (which is going to get tougher) and (2) skepticism of potential buyers regarding new plane deliveries, which are more problematical today than they were a month ago. The rail, bus and airline systems are now so swamped, it's practically impossible to get accommodations, even with priorities. With no hope for early improvement, look for more business executives to turn to good, fast airplanes for transportation. Charter operators also will feel the effect of the transportation crisis and should enjoy profitable months through October.

★ ★ ★

CAA Thinking on Airworthiness

Three major considerations are guiding the CAA's proposed new airworthiness requirements, framed by Charles F. Dycer of the CAA Aircraft Components Service. One is the question whether the airplane itself has caused too many accidents by requiring too high a level of skill to operate it. Anticipating an influx of new pilots after the war, CAA holds that airplanes should be designed and produced safer to fly with a lower level of pilot skill. Better rate of climb—to lower accident rate caused by inadvertent stalls—is especially desired to protect unskilled beginners. Second CAA point is to write regulations that will leave manufacturers free to use their ingenuity and technological ability. For example, once it is determined how strong a structure should be to be safe, any type of structure that meets that standard should be accepted. The third consideration, as worded by the CAA, is that "this policy has resulted in production of better civil planes in this country than anywhere else in the world." The proposed new airworthiness requirements, discussed at length in previous issues of SOUTHERN FLIGHT, establish six categories of airplanes—(1) special

Army Ground Forces airborne troops loading a Boeing C-97 Transport

Finish the Fight — with War Bonds

Super-transport

The new Boeing C-97 Army Transport, military version of the mighty Stratocruiser, has already made world headlines by its record-shattering coast-to-coast flight. Crossing the continent at an average speed of 383 miles per hour is big news. But there are other facts about this versatile airplane that are just as startling. Among them are *payload capacity and low operating cost.*

In post-war service the Boeing Stratocruiser, accommodating 72 to 108 passengers, will make possible more comfort, safety and economy for air travelers. Cross-continent delivery of "red-ball" freight on a one-day schedule can also be regular procedure. And both fares and cargo rates can be reduced. High cruising speed, great carrying capacity and ease of loading and maintenance give the Stratocruiser amazingly low direct operating costs.

As a military transport, the C-97 can carry 120 fully armed troops; or several score litter cases with medical attendants; or two medium-size trucks, plus other cargo. Furthermore, the trucks can drive right in, using a built-in ramp at the rear of the plane.

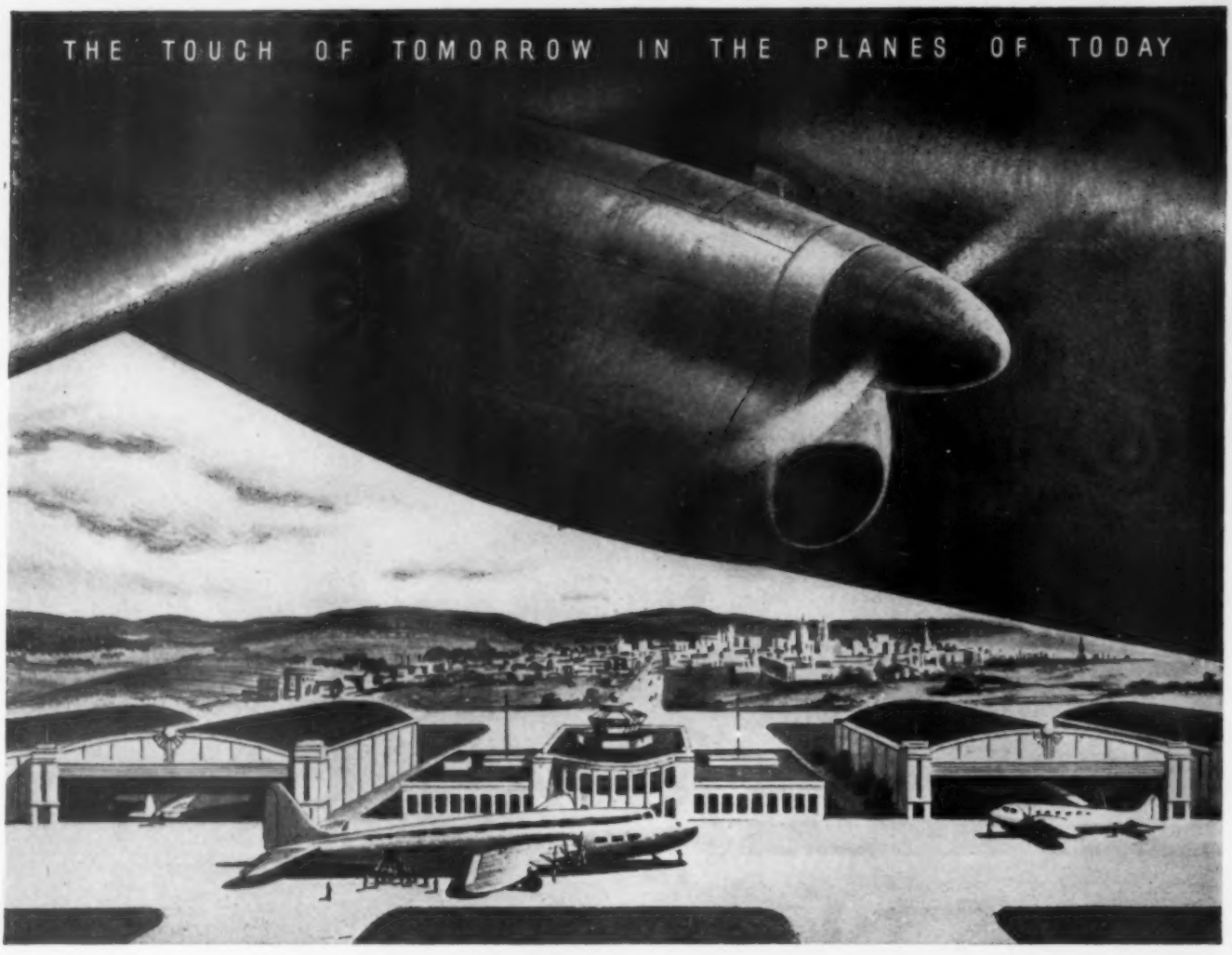
Special equipment cuts loading time to a minimum. The airplane's self-contained electric power-hoist picks up heavy freight and positions it wherever wanted in the upper deck. At the same time, the two lower-deck compartments can be loaded through side doors.

The aerodynamic advancements built into this first true super-transport of the future are the result of Boeing's long experience in the design and production of four-engine aircraft—the Flying Fortress and Superfortress—the Boeing Stratoliners operated by TWA and Pan American, and the Pan American transocean Clippers.

After victory, Boeing leadership in research, design, engineering and manufacture will bring you the Stratocruiser and other forward strides in air transport. You can be sure . . . if it's "Built by Boeing" it's out in front.

DESIGNERS OF THE B-29 SUPERFORTRESS • THE FLYING FORTRESS • THE NEW STRATOCRUISER
THE KAYDET TRAINER • THE STRATOLINER • PAN AMERICAN CLIPPERS

BOEING

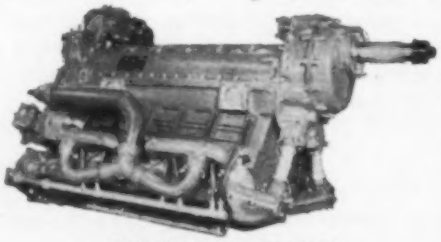


POWER FOR THE FEEDER LINES

There will come a day—soon—when the quiet inland towns, farming communities, and small cities are linked more closely to each other and to big city markets.

The lines that will draw them closer will be the airlines—the short-run lines that "feed" passengers and freight to the big mainliners on trans-country routes. Business—and competition—will grow.

Ranger Engines will take "wing-side" seats at this competitive show, offering operators of the nation's feeder airlines, dependable, versatile, *economical* power!



THE RANGER TWELVE

The sleek-lined Ranger Twelve fits modern aerodynamic design. Aircooled, inverted, *inline*, it lends itself to a wide variety of installations, single or twin, pusher or tractor, open or submerged in wings or fuselage. A minimum of frontal area reduces drag.

Economy in maintenance costs looms large in profitable airline operations. Rangers are designed to meet this competitive requirement. Fairchild research and engineering aimed to give the sturdy Ranger Twelves long life between major overhauls; a low rate of gas consumption; accessibility for routine inspections and adjustments.

BUY U. S. WAR BONDS AND STAMPS

RANGER AIRCRAFT ENGINES

Division of Fairchild Engine and Airplane Corporation • Farmingdale, Long Island

Going civilian . . .

Gone are the guards, the "stop" signs, the uniforms, the deep drone of service ships. Gate and hangars are open. Little planes out on the line wear bright colors, others are inside for recovering, paint, engine overhaul . . . Flying is going civilian again! . . . And Air Associates is going with it.

Today, with eighteen years experience distributing standard supplies and equipment, with warborn knowledge and facilities for the manufacture of specialty components of our own design and engineering . . . Air Associates offers the industry's largest stockroom to meet the needs of private, commercial and military aviation . . . Four strategically located offices and warehouses, efficiently staffed and adequately stocked with thousands of items, stand ready to give you prompt attention at proper prices!

AIR ASSOCIATES, INC.

TETERBORO, N. J. . . . *BRANCHES:* CHICAGO, DALLAS, LOS ANGELES . . .
ENGINEERS AND MANUFACTURERS OF AIRCRAFT SPECIALTIES . . .
SUPPLIERS OF ALL TYPES OF MATERIALS TO THE INDUSTRY SINCE 1927

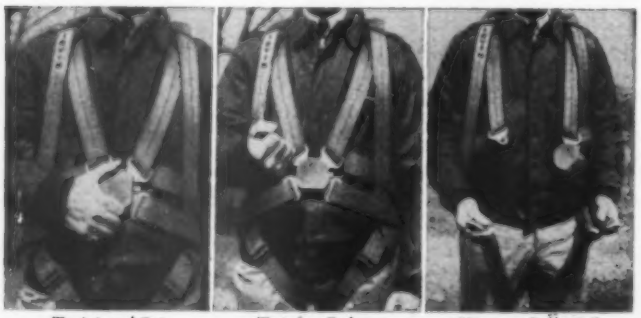
IRVIN Air Chute

"SINGLE-RELEASE" Harness

UNITED NATIONS' FLYERS
are using it for
SAFER LANDINGS

A one-hand turn and a tap on the single frontal disk instantly releases the harness . . . leaving the flyer entirely free. Accidental release is impossible before disk is "set" for action.

All United Nations' Air Forces for years have used IRVIN as standard equipment . . . and now the Irvin "Single-Release" harness is acknowledged as superior for all landings. IRVIN, as always, leads in Safety.



Twist and Set *Tap for Release* *Harness Falls Off*

IRVING AIR CHUTE CO., Inc.

Main Office: 1670 Jefferson Ave., Buffalo 8, N. Y.

Complete Factories in Buffalo, N. Y., Glendale, Calif. (1500 Flower St.), and Lexington, Ky., U. S. A. . . . Canada, England and Sweden . . . All Serving the United Nations' Air Forces.

BUY MORE WAR BONDS

personal (non-acrobatic), (2) normal (non-acrobatic), (3) utility (training; limited acrobatic), (4) acrobatic (advanced training), (5) restricted purpose (industrial), and (6) transport. The first two would be for personal use and would not be built to withstand acrobatics, the customer being explicity informed of the plane's limitations.

★ ★ ★

Snag for Air Travel Cards

Discounts to Air Travel Card holders will not be approved by the Civil Aeronautics Board anytime in the near future. The airlines had hoped for discounts to go into effect July 1. Source of trouble is in the anti-trust division of the Department of Justice, where one official takes the view that discounts are discriminatory.

★ ★ ★

Turbo-Electric Propulsion for Aircraft

You'll hear more about electrically-propelled transport airplanes. Already in the design stage are a 1,000-hp. electric motor weighing only 350 pounds and a 500-kilowatt auxiliary prime mover with general equipment and overall weight of less than three-quarters pounds per horsepower, according to Austin F. Trumbull, United Air Lines representative with Douglas Aircraft Company. He expects electrical power in aircraft to run as high as 25,000 kilowatts within five to ten years. Addressing the Kansas City SAE Section recently, Trumbull said manufacturing costs of electrically-propelled planes are being estimated now, and that preliminary engineering suggests that planes powered by turbo-driven electric motors might incorporate substantial savings in weight and power because of reduced drag and more efficient propeller location.

★ ★ ★

Champion Distributor?

Les Bowman's Aircraft Sales Company of Meacham Field, Ft. Worth, might hold the present national record for number of airplane orders placed with manufacturers. Late in May his score was 367 Pipers, 75 Stinson Voyagers, 105 Republic Seabee amphibians, all with cash deposits.

★ ★ ★

Two-cycle Engine Progress

General Motors' experimental two-cycle aircraft engine, under development for about six years, is gaining new friends and influencing people with its performance in a Cessna Airmaster. Developing in the neighborhood of 250 hp., the engine is two rows of four cylinders each, burns 91-octane fuel and is mounted to the airframe by means of bolts into the cylinder heads. . . . Higher horsepower is expected from a small two-cycle engine manufactured on the West Coast and used to power small radio-controlled target planes. It now delivers twenty hp., and intensive research and experimental work is aimed at forty to sixty hp. soon.

★ ★ ★

Enemy Engineers Not Too Smart

A survey of Nazi, Italian and Japanese motorized war equipment by over sixty-five representatives of the SAE War Engineering Board, who have been making engineering analyses at U. S. Army request, has disclosed little newer, or better, than Uncle Sam already produces, says the SAE. German equipment is said to follow established peacetime practices, Japanese to copy 1936 models, Italian to be inferior. Among few items reported as meriting study and tests by industry are Japanese air-cooled diesel engine, regarded either as amazingly simplified or astoundingly crude; German clutches, transmissions, hydraulic torque converter, and bevel gear driven motorcycle of advanced design.

Incidentally, it is known that Germany belatedly made many if not all of their developments available to the Japs. We're now getting first-hand acquaintance with these developments from elaborate studies of captured German secrets in jet, radar, rockets and instruments. Freeman Field, Seymour, Indiana, has been designated as a center for the AAF Air Technical Service Command to receive, catalog, recondition and preserve enemy planes and equipment. Great quantities of captured material are being consigned there.

Scintilla "sparks" the finest

- FRANKLIN AIRCOOLED
- KINNER
- CONTINENTAL
- JACOBS
- LAWRANCE
- LYCOMING
- PRATT & WHITNEY
- RANGER
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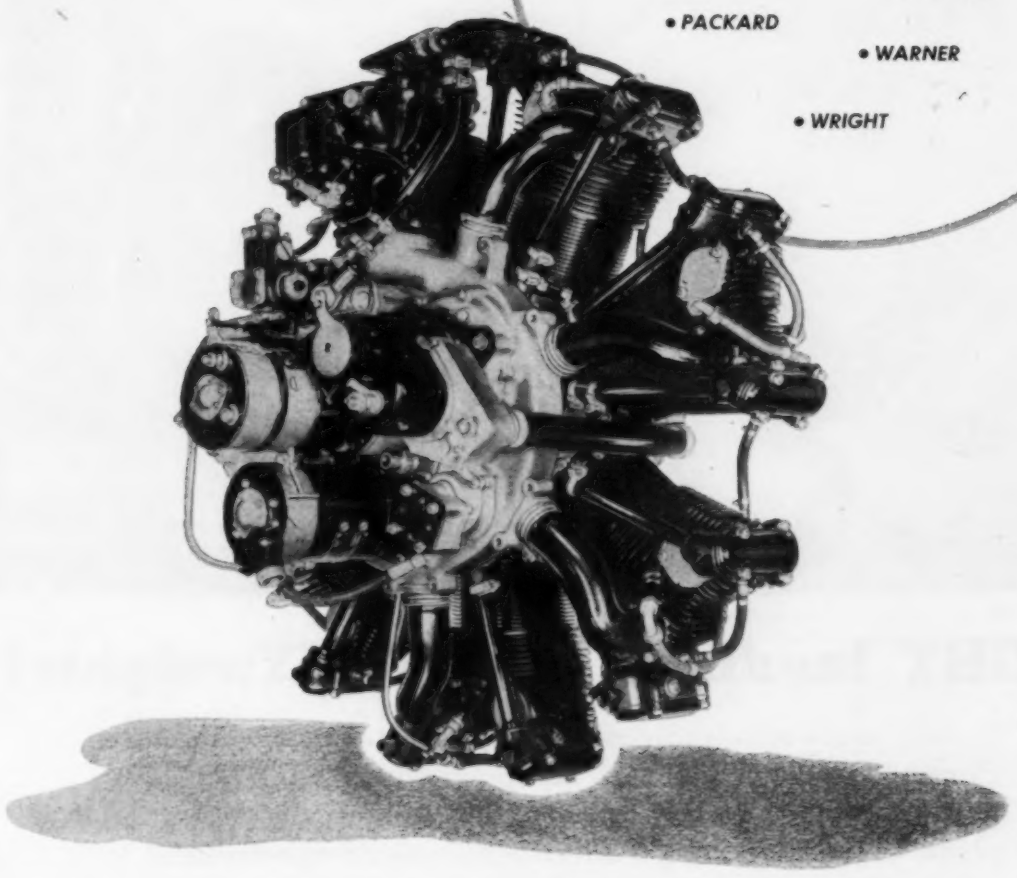


Warner Aircraft Engines . . . Chosen for one of war's tough jobs—Powering airforce trainers is no soft job. The hours are long, the pace is killing, time for overhauls is scarce, and inexperienced hands can mistreat engines. Their fine record under these conditions is a tribute to Warner Aircraft engines, and Bendix-Scintilla* Aircraft Ignition equipment.

SCINTILLA MAGNETO DIVISION
SIDNEY, N. Y.

*TRADE MARK

ARMY E NAVY

PRODUCT OF

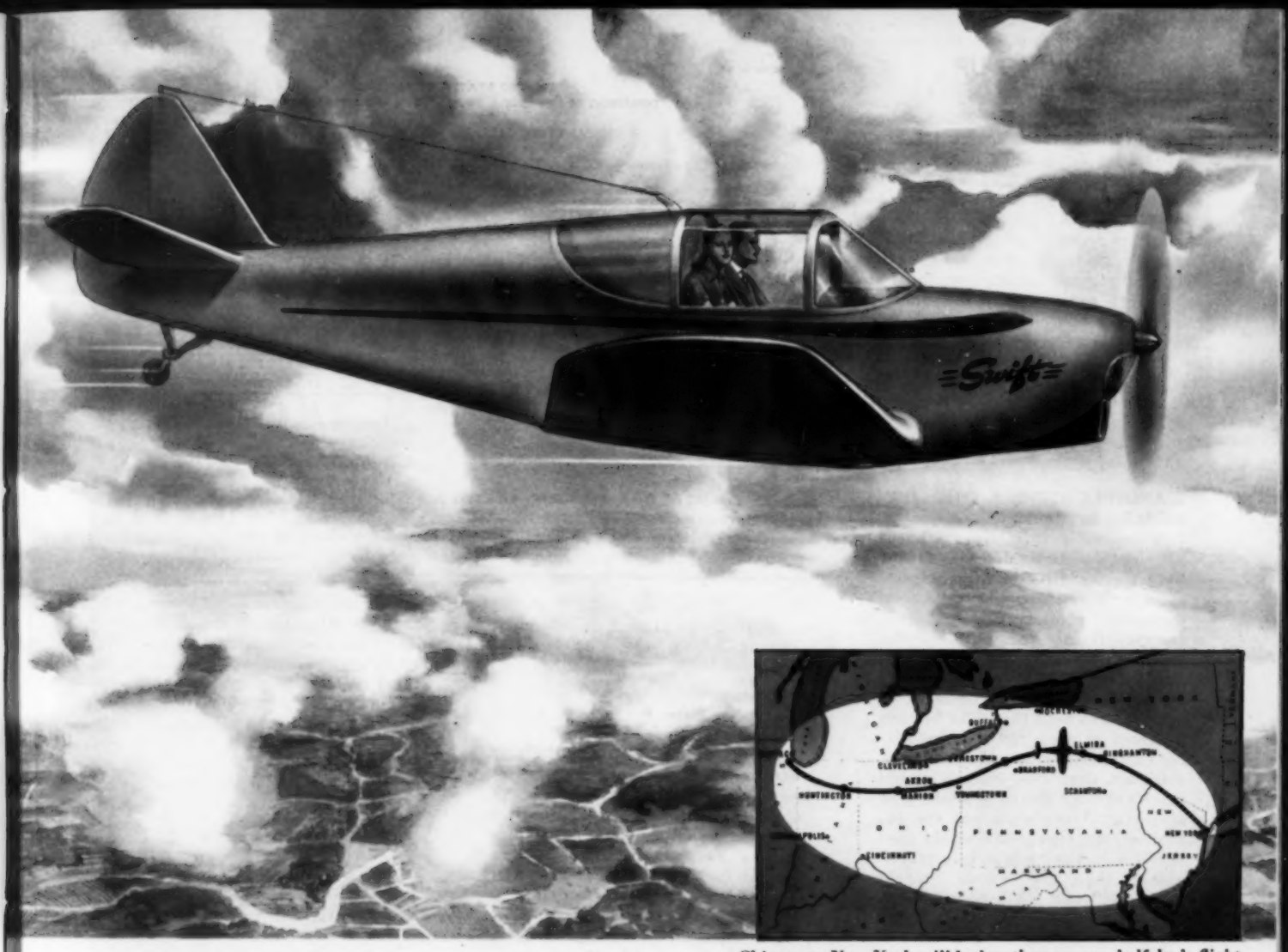
Bendix
AVIATION CORPORATION

LIGHT landings for HEAVYweights!

To help make safe landings, giant transport planes, such as the Constellation illustrated, are equipped with AEROLS (Cleveland Pneumatic shock absorbing landing gear). By protecting plane, crew and cargo, AEROLS contribute substantially to aviation's progress—as planes grow in size, weight and speed, AEROLS help solve their landing problems. ◆ Our major products, used in many industrial fields, are mentioned below. Whatever your needs, Cleveland Pneumatic engineers offer you the benefit of over 50 years manufacturing experience.

THE CLEVELAND PNEUMATIC TOOL CO., Cleveland 5, Ohio

Speed Final Victory! Buy MORE War Bonds



Chicago to New York will be less than an easy half-day's flight in the new *Swift* . . . gas and oil may be less than 1c per mile

The *Swift* gives you new range and speed . . . in your safe, low-cost personal plane

Whether you fly your new *Swift* for business or pleasure, you will enjoy the satisfaction of flying a stable, easy-to-handle plane with plenty of power and speed . . . with 600 miles of cruising range . . . a plane with the utility and safety you need for *practical* personal flying.

Flying the *Swift* a business man can cover three times more territory than by traveling on the ground . . . making frequent, long range trips *profitable* instead of expensive. Flying, you can add treasured days to your stay in vacationland . . . and spend week-ends hundreds of miles from home . . . all at a low, direct operating cost — probably no more than it costs you to drive a low-priced car.

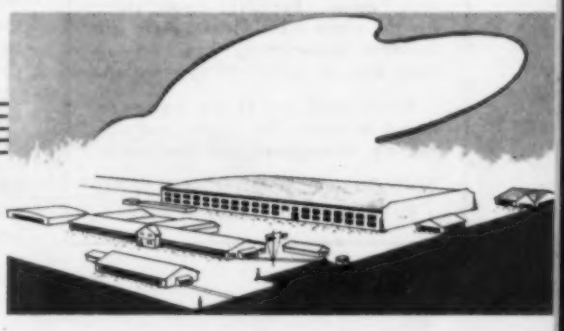
Yes, the new *Swift* will give you performance you have never known in a low-priced personal airplane . . . because the *Swift's* design is based on the preferences of personal plane pilots, plus extensive experience in manufacturing both personal airplanes and planes for the U. S. Army.

We anticipate that your new *Swift* will soon be available through the dealer in your territory.

The Swift

Made by GLOBE AIRCRAFT CORPORATION Fort Worth, Texas

Illustrated booklet sent on request. Write to P.O. Box 4277-S Fort Worth 6, Texas



REVVING UP

(Continued from page 3)

Regulations, Air Traffic Rules, scheduled to go into effect August 1, were modified on June 27 by CAB to provide for contact flight against the base of clouds up to 700 feet instead of 1,000 feet, as provided in the revised Part recently adopted. CAB also changed provisions of new Part 60 to permit instrument flights down to 1,000 feet rather than the 1,500-ft. minimum proposed in the new Part. The provision for a 1,000-ft. minimum for instrument flights is the same as in the old Part 60, presently in effect, and will therefore have no effect on present instrument procedure.

★ ★ ★

ANOTHER VICTORY OVER PHYSICALS: A probability of interference with safe flying by a physical defect or disease, rather than a possibility of interference, must exist before the CAA can disqualify a pilot from non-commercial flying for physical deficiency. So ruled the Civil Aeronautics Board in an opinion handed down last month. The CAB opinion also held that "the burden of proof is upon the Administrator to show by a preponderance of evidence that the disease would interfere with the safe piloting of aircraft." Were such not the intention, the regulation would contain the words "might interefere" rather than the words "would interfere," the CAB pointed out.

★ ★ ★

THOUSANDS LICENSED TO FLY: During the seventeen months ended May 30, 1945, the CAA issued 68,197 student permits for flight instruction. In addition, approximately 2,000 civilian certificates per week are being issued by CAA to military pilots while they are still in the service, and the number is increasing. Issuance of new certificates to civilians remains fairly normal. The monthly record of student permits, according to CAA, has been as follows: 1944—Jan. 1803, Feb. 1914, Mar. 2143, Apr. 2517, May 3508, June 4396, July 5726, Aug. 7022, Sept. 6935, Oct. 6853, Nov. 5126, Dec. 3675; 1945—Jan. 3275, Feb. 3198, Mar. 4445, Apr. 2656, May 3005.

WANTED

Man between age of 25-40, prefer business experience or experience in financing, sales or insurance. Flying ability is secondary but applicant must have at least a private license. Excellent opportunity for the right man. Please state all business experience, age, education, etc., in letter of application.

Established aviation concern based in major Texas city and operating throughout the Southwest.

Write Dept. E, SOUTHERN FLIGHT, P. O. Box 750, Dallas 1, Texas

FORM ACA 505

UNITED STATES OF AMERICA
DEPARTMENT OF COMMERCE . . CIVIL AERONAUTICS ADMINISTRATION

MEDICAL CERTIFICATE, STUDENT AND PRIVATE PILOT

THIS CERTIFIES that I personally examined

James (FIRST) Robert (MIDDLE) Black (SURNAME)

Address 1642 Remease Avenue

New York City, New York

8-15-18 (DATE OF BIRTH) 185 (WEIGHT) 73 (HEIGHT) Brn (COLOR) Brn (EYES) M (SEX)

and find him free from any disease that could be [illegible] to suddenly diminish capacity and, except as noted hereon, that he possesses no structural defect or limitation. I have forwarded the report of my findings to the Civil Aeronautics Administration.

Date June 1, 1945

Place Manito, Illinois

Signed Henry P. Smith, M. D.

State Board License No. Ill. 806

STRUCTURAL PHYSICAL DEFECTS

List defects. If none, so state

Impaired vision Both Eyes

Impaired hearing None

Deformity None

Limited motion None

Amputation None

Remarks: R.20/200 Cor. 20/30;L.None
Holder shall wear correcting lenses while exercising privileges of his airman certificate

James Robert Black (SIGNATURE OF APPLICANT)

SPECIMEN

Any alteration of this certificate is punishable by a fine of not exceeding $1,000, or imprisonment not exceeding 3 years, or both

SAMPLE OF NEW CAA MEDICAL CERTIFICATE for student and private pilots shows simple statements from physician of applicant's own choosing. This certificate is part of a four-page form which physician obtains from CAA. Revised physical requirements went into effect June 1.

BETTER SERVICE FOR STUDENTS: Scores of instructors are being appointed flight examiners by CAA to facilitate service for the growing number of student pilots. Latest instructors in the 4th Region to be qualified to give private license flight examinations are: Lloyd D. Catlin, Nuckols Airport, Oklahoma City, Okla.; Shelton G. Clayton, Vernon, Tex.; Paul V. Liberto, San Antonio, Tex.; Oscar N. Travland, Beeville, Tex.; Claude W. Glasson, Portland, Tex.; Frank H. Smith, Victoria, Tex.; Frank F. Bryant, Eagle Pass, Tex.; Evert T. Crawford, Nacogdoches, Tex.; Norman N. Wise, Kilgore, Tex.; Boyce T. Dunlap, Longview, Tex.; Welborn W. Sanders, Marshall, Tex.; Harrold E. Wise, Texarkana, Ark.; Clyde W. Fellers, Bryan, Tex.; Harvey K. Pennell, Houston; Glenn E. Parker, Port Arthur, Tex.; Mary Owens, Fort Worth, Tex.; Curtis P. Bower, Houston, Tex., and Joe P. Bohannon, Abilene, Tex.

★ ★ ★

ABOUT FOLKS: C. R. Smith, who left the Army Air Forces as a major general on May 31, has been named chairman of the board of American Airlines, and Ralph S. Damon has been promoted from the vice presidency to president, succeeding A. N. Kemp, who will remain as an active board member. . . . Ray Ellinwood has resigned as president and general manager of Adel Precision Products Corp., and is setting up a new organization bearing his name to develop, manufacture and market a variety of new products. Big things are expected of him in the new undertaking. . . . Vernon (Pancho) Ramsey is back in the States after a long stretch as director and chief pilot of Rubber Development Corporation's South American aviation service at Manaos, Brazil. Pancho is now hooked up with Laister-Kauffmann Aircraft Corp., St. Louis, as export sales manager.

★ ★ ★

FOR THE RECORD: Commenting on our report in these columns last month regarding the $46,837,000 CAA-CAB appropriation for the next fiscal year, a Washington reader points out that only $1,700,000 of that amount is for the Civil Aeronautics Board. "It is interesting," our informant adds, "that the CAB, one of the smallest agencies of the Federal government, employs a total of only 300 people. The Board, as the over-all policy-making organization for civil aviation, can well boast of its efficient management and small overhead cost to the government. Naturally, the CAA, as the enforcing agency for the Board's policies and as an agency developing and improving aviation, requires considerable more money with its 11,000 employes."

★ ★ ★

FROM GEORGIA TO ALASKA: Southern Airways' Atlanta base is going full tilt modifying C-47's into DC-3's for Alaska Airways. Starting March 1 with three mechanics, Modification Director Frank Say has turned out two complete airliners, the first requiring 15,000 man hours, the second less than 10,000. Eighty mechanics are now employed. Coming up is a cargo C-47 modification, with specially-designed doors for heavy, bulky hauling.

★ ★ ★

Sign of the Times

So you're going to operate an air taxi! Well, it may not be long, now . . . you'll put the finishing touches on the sign over the office door, insert your first ad in the daily paper, and take up a strategic position by the telephone to greet your first customer.

But in planning and working for this big moment, you will have faced three paramount requirements of successful operation: safety in flight operation and navigation, economy of operation, and ability to render around-the-clock, around-the-calendar service to the public.

You will find the answer to these requirements in high quality instrumentation — *complete* instrumentation. And it is in this phase of commercial aircraft operation that Kollsman can serve you. Kollsman Aircraft Instruments have played a vital part in the success of the nation's airlines since their earliest days.

Whatever your operation is to be, Kollsman accuracy and dependability can be one of your greatest assets, too!

Write today for our interesting and informative booklet "Facts About Kollsman Aircraft Instruments." Kollsman Instrument Division, Square D Company, 80-20 45th Ave., Elmhurst, New York.

KOLLSMAN AIRCRAFT INSTRUMENTS

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Count on Stinson

FOR LEADERSHIP IN PERSONAL PLANES

THE FIRST STINSON PLANE BUILT, back in 1926, combined features new to the world of flying. Such innovations as enclosed cabin, wheel brakes, electric starter, and cabin heater made this 1926 Stinson a "standout."

And built into this first Stinson was an *inherent stability* that has been an outstanding characteristic of every Stinson plane built during our 19 years of leadership in private flying.

Stinson has pioneered in the development of safety devices and *safety design* for personal planes. As a result, Stinson planes have an unequalled safety record in the air.

SOME STINSON "FIRSTS" IN 19 YEARS OF BUILDING QUALITY PLANES

FIRST to fly from Detroit to Tokyo.

FIRST to fly from New York to Bermuda.

FIRST to carry air mail in China.

FIRST to carry government mail in Mexico and in the Philippines.

FIRST to explore the Greenland route to Europe, the present-day route of the North Atlantic Air Ferry.

FIRST to provide air-mail pickup service.

Stinson Planes for War

Wherever our men are fighting, on fronts around the globe, the Stinson Sentinel L-5, the "Flying Jeep," is a familiar and welcome sight.

These famous Stinson liaison planes serve as "air eyes" for the armed forces, as parachute supply planes on jungle commando missions, as flying ambulances, and on important and hazardous liaison duty—almost always in the thick of battle.

Here at home, Stinson Voyagers have carried out 65 per cent of the Civil Air Patrol's operations.

The Stinson Reliant AT19 is widely used by the British as a navigational trainer. And Stinson planes are used by almost every airline in the United States to train and check pilots.

The New Stinson Voyager 125

Here's the Stinson Voyager 125, the personal plane that we will be making as soon as war conditions permit.

It is a plane that combines the *safety* and *reliability* of the prewar Stinson Voyager with the *toughness* and *utility* of the "Flying Jeep."

Powered by a 125-h.p. engine, the Voyager 125 carries pilot and three passengers. It has a cruising range of 580 miles, a rate of climb of 670 feet per minute at sea level, and a service ceiling of 14,000 feet.

The Voyager 125 has a maximum speed of 128 m.p.h. and cruises at 116 m.p.h. It takes off, with flaps down, after a run of 550 feet, lands with a roll of 280 feet.

We invite inquiries about the new Stinson Voyager 125, and our plans for the production of personal planes.

For full information and free, illustrated brochure, write to Private Sales Director, Stinson Division, Consolidated Vultee Aircraft Corporation, Wayne, Mich.

PARTS FOR STINSON PERSONAL PLANES
Stinson service is available to help the thousands of Stinson owners to keep their planes in the air. We are now making a full line of parts. Order those you need through your local Stinson distributor or direct from the factory.

Stinson

The Aircraft Standard of the World

DIVISION—CONSOLIDATED VULTEE AIRCRAFT CORPORATION
WAYNE, MICHIGAN

Did you say—
No servants' quarters?

Mrs. Pragbottom peered peevishly through her pince-nez at the postwar plane salesman.

But this was perfectly ridiculous . . . simply unspeakable! There were plenty of planes, of course, but such planes! That gorgeous pastel pink job with the dropped living room and the built-in bar would be grand but *so* tiny. And that beige and blue number with the penthouse was simply stunning . . . *but no servants' quarters!*

"Why," spluttered Mrs. Pragbottom, "it's practically prewar!"*

*Not quite, Mrs. Pragbottom, not quite prewar! But that postwar miracle plane you've set your heart on won't be here the day the Japanese are beaten. For a year or two, after the war, you won't see much difference between the prewar and postwar WACO. But keep your chins up, Mrs. Pragbottom. Prewar or postwar, WACO means comfort and stability . . . speed and safety for all-weather flying. WACO stands for *better* planes . . . for better flying. THE WACO AIRCRAFT COMPANY, 97 Peters Avenue, Troy, Ohio, U. S. A.

ALL ARMY CARGO-TRANSPORT GLIDERS ARE WACO DESIGNED

WACO AIRPLANES

Waco

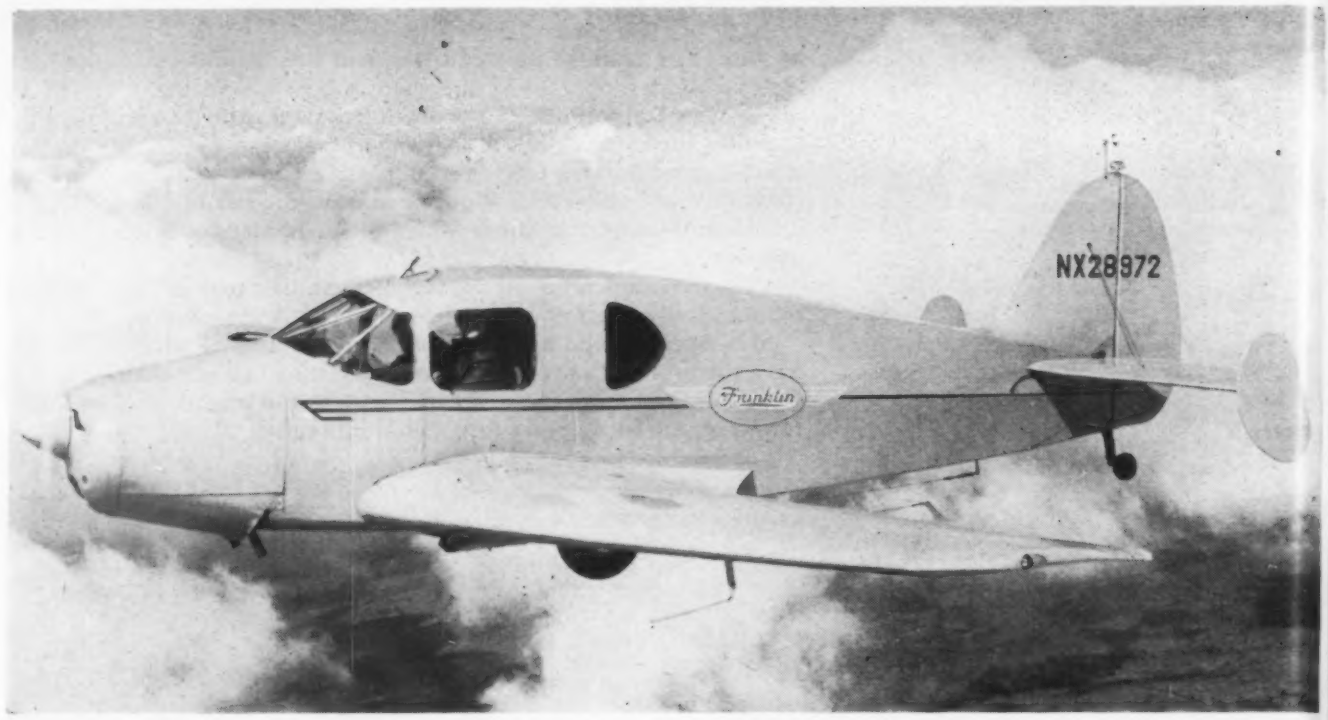
ABOARD THE CARRIER they call this man the "rainmaker." He's an Aerographer... his important job is forecasting the weather. Important? Put yourself in a tight little cockpit watching the carrier deck drop away as you head for a cloud-banked horizon lugging a couple of explosive calling cards in your bomb racks. Would *you* want the risk of unknown weather conditions added to the hazards of a job like that?

Very lives depend upon the technical skill of tens of thousands of such trained technicians in our Armed Forces.

Men like this who have serviced flying, and those who have themselves flown in this war, are destined to add their great store of knowledge and experience to the bright future of America's peacetime aviation industry.

OUT OF THE WORLD'S LARGEST PETROLEUM LABORATORIES
have come aviation fuels and lubricants specially developed to match the spectacular performance, to meet the critical demands, of the Allies' great fighting planes. Esso aviation gasoline, currently being supplied to one out of every five Allied planes, is made in many grades to meet every standard test for volatility, vapor pressure, corrosion and gum, storage stability and knock rating.

The war years have added a great recent store of knowledge to our 40 years of aviation research... assuring you that "you can depend on Esso products"... now and in the brighter tomorrows to come.



1946 BELLANCA CRUISAIR is four-place, 130-hp. improvement over prewar design, with cruising speed of over 130 miles per hour promised. Demonstrators are expected in October, deliveries to customers may begin by end of year.
—(Hans Groenhoff Photo.)

Private Flying Roundup:

The Beech-Cessna Merger; Five New Stinson Models

First of several expected consolidations offers significant possibilities. . . . Stinson offers service plan. . . . Bellanca Cruisair ready this fall. . . . 125 surplus types approved.

WITH reconversion to civilian aircraft production well under way, three major developments in the personal aircraft industry occupied the spotlight in June. First was the proposed merger of Beech and Cessna into a formidable contender for the growing postwar market. Second was revelation of general plans of Consolidated Vultee's Stinson Division. Rounding out the picture was news from Bellanca on its forthcoming deliveries.

These developments were accompanied by a growing volume of surplus aircraft sales and certifications, with indications that surplus engines for lightplanes would be placed on the competitive market within weeks.

One of the most significant points in the merging of Beech Aircraft Corporation and Cessna Aircraft Company in Wichita, Kansas, was the fact that the two firms' postwar models are not competitive but mutually complementary. By combining the two lines, the Wichita organization will offer a complete line of private and commercial airplanes of from two-place to fifteen-place capacity under one distributors or dealers contract. In addition, the consolidation offers opportunity for substantial operating and manufacturing economies.

While neither firm has revealed details of postwar designs, Cessna has been working on a new, all-metal four-place personal plane and an all-metal two-place design. Beech, a major factor in twin-engine aircraft, has a substantial volume of feeder-type transports booked. Commercial Model 18 twin-engine Beechcrafts will again be produced starting October 1, and T. A. Wells, vice president and chief engineer, expects to build the transports at a rate of about one a day. "There's an 'if' in this plan," says the company, referring to availability of materials, but "that does not seem to be too serious an obstacle." To resume commercial production, more than $1,100,000 worth of engines has been contracted for in a firm order. In addition, Beech has an improved version of the popular prewar single-engine four-place Beechcraft, and is readying an all-metal 150-hp., four-place model in the $5,000 category. Beech's controllable pitch propeller (Roby) is a valuable property with extensive postwar prospects.

Both Beech and Cessna own outright large-scale machine-shop and metal-working facilities acquired during war production programs, during which the firms greatly strengthened their

financial positions. Cessna has been operated since 1934 by Dwane and Dwight Wallace, nephews of Clyde Cessna, the founder, and Dwane previously was a designing engineer with Beech. Walter H. Beech, president of the firm bearing his name, was associated with Clyde Cessna in the old Travel-Air Company. Under the merger, one new share of Beech stock will be offered for each three shares of outstanding Cessna stock.

The consolidation might result in a combination ranking as one of the country's strongest manufacturers of private and commercial aircraft. It is the first of several major mergers expected to launch the postwar aviation era, and production in Wichita is expected to boost considerably the 22,300- to 24,500-plane production now being shaped by personal aircraft manufacturers for the first full year of civilian output. Culver Aircraft Corporation of Wichita expects to build 3,600 planes annually, and Beech-Cessna will begin with more extensive production facilities.

Stinson Line Includes Twin-Engine Transport

The Stinson division of Consolidated Vultee Aircraft Corporation has revealed it will build a postwar line of five models, ranging from a two-place, low-price trainer design to a twin-engine junior executive transport of five-six place capacity. In between will be a three-place design, a five-place high-speed "plane of the future." And the four-place, 125-hp. Voyager.

Details of the new models have been withheld, but the five-place "plane of the future" planned by Stinson is expected to embody revolutionary features not yet discussed by any other manufacturer for personal flying. Its speed probably will be in the military ranges, and the craft is designed to appeal to business executives and sportsmen pilots. It has been named the "Sky Coach." Of much significance in Stinson's new line, announced by J. C. Welsch, private sales director, is the absence of any mention of a "flying auto" or roadable airplane. Such

(Continued on page 40)

THINGS HAVEN'T CHANGED MUCH

History was made seventeen years ago when Ed C. Nilson and Harold Mueller, Waco distributors for Florida, joined with Cohen Brothers store to sell airplanes and accessories in downtown Jacksonville showrooms and windows. These scenes show smart merchandising technique employed. Last month Oliver L. Parks closed a deal with Marshall Field and Company for a similar department store sales plan, 1945 model, in Chicago.

A WIRE service story receiving wide publication in mid-June reads in part as follows: "Marshall Field and Company announced Saturday that it will be the first department store in history to sell airplanes. "

Well, folks, t'aint so.

Cohen Brothers of Jacksonville, Florida, pulled this one back in '28. And it created quite a stir, too. Herewith are the photographs to prove it—right out of the historical photo album of Ed C. (Pop) Nilson, Beech Aircraft sales executive, who, with Harold Mueller, distributed Waco airplanes in Florida back yonder during the Lindbergh boom.

Pop says they were a little ahead of the times and that they didn't sell many Wacos at Cohen's department store; but it was good publicity because more than 50,000 curious "Crackers" were clocked on the display floor during the first week. Pop observes that it's still good publicity, judging from the national coverage given the Marshall Field story, including Gracie Allen's daily column.

There are several interesting comparisons between the 1928 story and the 1945 version. The Jacksonville paper, in its issue of December 1, 1928, was a little more on the modest side. Instead of claiming "the first in history", it stated, "The aviation department of Cohen Brothers is believed to be the first of its kind in a department store in the South."

While the 1945 Marshall Field story carries the announcement that the Company will distribute a two-passenger plane selling for something under $3,000, the Cohens advertised their two-place Waco for $3,260, with free flying lessons thrown in as bait, which goes to show that prices haven't come down much in seventeen years.

Also, the Jacksonville reporter was a little more generous with space and wrote up the Waco as having "the ability to take off quickly, climb swiftly and land slowly, allowing a take-off or landing in most any field or pasture." In addition, performance figures were published which revealed a high speed of 110 miles an hour, a cruising speed of 80 to 90 miles per hour and a gas consumption of from 10 to 12 miles to the gallon.

Of course there weren't any Gracie Allen columns or quite so many aviation magazines back in the old days, so the Cohen Brothers experiment failed to attract much attention outside the deep South. But the fact remains that the Cohens beat Marshall Field to the idea by seventeen years, which makes us realize there's really nothing new under the sun, particularly in the aviation business.

★ ★ ★

Reading The Weather

By MAC WEIR
Meteorologist, Parks Air College
East St. Louis, Illinois

IT is true we can't do anything about weather, but we can interpret what we have. The pilot cannot prevent icing conditions along his route, nor can he stop a cold front from crossing his flight path, but he can do the next best thing. "Read the weather."

By reading the sequences and thoroughly digesting each section of the report, he can obtain a complete picture of the weather conditions existing along his route.

Let us suppose that you are going to fly to Washington. What would you like to know about the weather conditions at that airport? The surface wind? By reading the report we find that the surface wind is six miles per hour and is blowing from the south southeast. You should also know the ceiling and visibility. We find that the ceiling is 4,500 feet and the visibility is three-eighths of a mile. Now we know that the airport is closed and we wouldn't be able to land at Washington. By reading the report you have saved yourself time and money. By examining the sequence further it is often possible to determine just how soon the airport will allow flying to begin. In this particular report we find at the end, these words, "vsby dcrsg," which simply mean visibility decreasing. Now we have a good indication that the airport will not be open for flying for several hours, at least until, the visibility increases. This question arises: What is keeping the visibility so low? By reading further we find that rain and fog exist at Washington, we also find that it is light in intensity, therefore it should not be of long duration. Our hopes rise. Will the next report show that the rain has stopped and the fog dissipated? Perhaps the next hourly sequence will indicate that the visibility has increased sufficiently to allow flight operations to begin.

Let us go back. We have examined only five parts of the sequence report and we have obtained a fairly good picture of the existing weather conditions at this particular airport, and the possibilities of improvement. Therefore, we begin to realize the vast amount of information we can obtain from reading the weather reports and if we remember that these reports come in from all over the country every hour we are able to secure a good picture of the existing weather conditions over the entire United States.

It should be the cardinal rule of every pilot, that before he attempts a cross-country flight or a local flight around his own airport, he should first, "Read the Weather."

To illustrate how to read a Weather Bureau sequence, the following explains the meaning of this code message:

"WA X P45 ◍/◍ 3/8R-F 200/79/70 ↑↖6 014 VSBY DCRSG"

WA-Washington

WA is a designator representing the name of a city which has issued this particular weather report on their existing weather conditions.

You can readily understand that when you are receiving reports from all over the United States, Canada and Mexico, you must be brief. For this reason, instead of spelling the name of the city in full, we abbreviate as above, WA-Washington.

A complete list of these designators may be obtained from the United States Weather Bureau at Washington.

Let us examine a few of the principal cities and their designator. They are easy to remember.

Chicago	CG
New York	NY
Detroit	DT
St. Louis	LS
Denver	DV
Dallas	DL
New Orleans	NO
Los Angeles	LA
Seattle	SA
Miami	MM
Philadelphia	PG
Fort Worth	FV
Kansas City	KC
Salt Lake City	SL
Memphis	PS
Pittsburgh	PT
Atlanta	AG

X P45

The section immediately following the station designator will contain either of the following: C, N, or X. Let us examine each one separately and in that way we will be able to interpret their meaning intelligently.

C, means contact flight rules will prevail. In other words, it is possible to keep a visual contact with the ground during a landing or a take-off.

N, meaning instrument flight rules will prevail, lets you know the ceiling, or the visibility, or both, have dropped so low the pilot must use his flight instruments to make a successful landing or take-off.

X, means the airport is closed. The ceiling and visibility have dropped to such low limits it is considered dangerous to attempt a landing or a take-off.

The question may well be asked: What are the flight rules governing these classifications?

If the ceiling is a 1,000 feet or more in height and the visibility is greater than three miles, then the airport is considered on Contact Flight Rules.

If either the ceiling, or visibility, or both drop, that is, ceiling below 500 feet and visibility below one mile, the airport is closed to all incoming and outgoing aircraft.

In the term P45, the number 45 gives you the height of the ceiling (ceiling is the height of the lowest cloud layer covering more than half the sky and below 10,000 feet). Therefore, we see at Washington we have a ceiling of 4,500 feet—not forty-five feet. To decode, you must always add two zeros and this gives you the actual height in hundreds of feet.

If, in following the classification letters e. g. (P) we do not find a numerical value, then the ceiling is considered unlimited or the clouds, if any are present, are above 10,000 feet. If the numerical value is followed by the letter V and the ceiling is 2,000 feet or less, it indicates that the ceiling is not rigid but is varying with respect to height. For examples, 16 V means 1,600 feet variable. The ceiling may be a little more, or a little less than 1,600 feet.

The letters preceding the numerical value merely verify the ceiling was obtained

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and what may be causing it to be so low.

EXAMPLES:

P—Precipitation ceiling.

E—Estimated ceiling (the actual height has not been measured but estimated).

M—Measured (the ceiling has been measured by a ceiling projector or some other mechanical device).

Z—Indefinite (the cloud base is not clearly defined, but irregular).

A—Ceiling has been reported from an airplane.

B—The ceiling has been measured by means of a ceiling balloon.

B18V—Ceiling 1,800 feet, variable, and the height has been measured by means of a ceiling balloon.

Sky Condition

This is a description of the clouds present and the amount of the sky that is covered with clouds. Instead of using words to convey this thought we use symbols.

EXAMPLES:

○ Clear, less than 1/10 of the sky is covered with clouds.

⊙ Scattered (sctd) — More than 1/10 but less than 5/10 of the sky is covered.

◍ Broken (brkn)—More than 5/10 but less than 9/10 of the sky is covered.

⊕ Overcast (ovc)—More tan 9/10 of the sky is covered with clouds or the entire sky is covered.

Considering our definition of ceiling, we find that ◍ and ⊕ are the only two symbols that can constitute a ceiling. So far, the clouds that we have been discussing have been low cloud symbols. In order to distinguish between high and low clouds we merely insert an oblique sign, /, after the symbol. EXAMPLES:

Hi Ovc ⊕/
Hi Brkn ◍/
Hi Sctd ⊙/

If we now combine our high and low clouds, we will have our complete sky coverage. EXAMPLES:

Hi ovc lwr brkn ⊕/◍
Hi brkn lwr sctd ◍/⊙
Hi brkn lwr brkn ◍/◍

If any of the sky symbols should be preceded by a plus sign (+⊕), there is a heavy or thick overcast indicated. On the other hand, a minus sign (—⊕), indicates a light or thin overcast. It might be well to keep in mind the fact that when a thin overcast is reported, you may feel reasonably sure that the next report will indicate broken clouds. This holds true in most cases in the early hours of the morning. The sun heats the surrounding air and the overcast will break up into small clouds and eventually will go to scattered and then unlimited. If, however, a thick overcast is reported, it may be several hours before the overcast will break into broken clouds.

3/8R-F

Immediately following the sky condition we have our visibility (vsby). Visibility is the maximum horizontal distance that natural objects can be seen and recognized. Visibility is measured in miles and in fractions of miles. If the visibility is ten miles or more it is considered unlimited and the numerical value is omitted from the report. When visibility is measured in fractions, it appears in a sequence report in this manner:

13/4 miles equals 1¾
11/4 miles equals 1¼
11/16 miles equals 1 1/16

If the visibility is followed by the letter V and is two miles or less it indicates that the visibility is not rigid but is variable, or it is fluctuating with respect to distance. EXAMPLE:

11/8V The visibility is 1⅛ miles and variable.

R-F

Following the visibility we have what is called the weather section. This section tells us what type of precipitation this particular station is having and what obstructions to visibility are present.

Precipitation is shown first and includes all types of falling moisture, such as, rain, drizzle, snow, etc. The second part shows obstructions to visibility, such as, fog, smoke, dust storms, haze, etc. This information is coded in the form of symbols or rather letters. Thus:

T - - Thunderstorm
RW - - Rainshowers
SW - - Snowshowers
R - - - - - - Rain
ZR - - Freezing Rain
L - - - - - - Drizzle
GF - - - Ground Fog
BD - - Blowing Dust
K - - - - - - Smoke
H - - - - - - - Haze
F - - - - - - - Fog

If the symbol or letter is followed by a minus sign (T-), a light thunderstorm is indicated. A plus sign following the symbol (K+), indicates the smoke is dense or thick. The absence of either a plus or minus sign indicates the phenomena represented is moderate. Therefore combining our information (3/8R-F-), we find that the visibility is ⅜ of a mile and there is light rain and light fog present at the station.

200/79/70

This section is divided into three parts, each part separated by a slant line to prevent confusion. The first part being the pressure and followed by the temperature and dew point respectively.

Pressure first. Pressure has always played an important part in the weather. Even the early sailors well recognized the significance of a falling barometer, and made the ship ready for a storm.

To the pilot and the meteorologist, pressure is just as important in attempting to forecast weather changes.

In order to have a closer check on what is happening to the pressure, the meteorologist has converted it from the conventional method of recording into millibars and to the nearest tenth of a millibar. This was done, so that the meteorologist could detect even the smallest changes in the barometric pressure.

In our sequence report we see three numerals "200". To convert this to its full value we move the decimal point over one place and add a nine or a ten, keeping it between two extremes, 1075.0 and 970.0 millibars. These two values represent the highest and the lowest pressure that the pilot will ever have to contend with. Keeping this rule in mind, you will have no trouble in deciding which numeral to add. EXAMPLES:

200 equals 1020.0 Millibars
180 equals 1018.0 Millibars
995 equals 999.5 Millibars
860 equals 986.0 Millibars

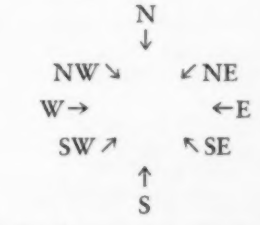
You should also remember that 1013.2 millibars is equal to the average barometric pressure, by keeping this in mind you will have an indication of whether your station is in an area of high or low pressure.

79/70

Temperature and dew point, these two values are not coded but instead you read them direct, 79° Fahrenheit and 70° Fahrenheit. We all are familiar with temperature, telling us how cold or how warm the air is. Dew point is also temperature, in fact, it is the temperature or point of the atmosphere which the air must be reduced in order to have 100 per cent saturation. Therefore, the closer the temperature and dew point come together, the greater the possibility of rain or fog.

Winds

Wind direction in sequence reports is always represented by arrows and it must be remembered that the arrows always fly with the wind. An error on the wind direction might easily result in a fatal accident, especially in the case of landing.



Single arrows represent the four main directions and their bisectors, but if the wind was actually blowing from the NNE, then it would be necessary to use two arrows. For example:

NNE - - ↓ ↙
NNW - - ↓ ↘
SSW - - ↑ ↗
SSE - - - ↑ ↖
ENE - - ← ↙
ESE - - - ← ↖
WSW - - → ↗
WNW - - → ↘

Immediately following the arrows we find the velocity in miles per hour. This is not in code but like the temperature and dew point it is read direct. Example: ↑ ↗ 12 South

(Continued on page 42)

Warning From Georgia

Strong political pressure perils aviation interests in the Cracker State. Others can profit by heeding the lesson of Georgia's fight for fairness.

By BILL KEY

AVIATION people in Georgia lost their chance for fair legislation this year, and were forced into a pressure fight that will have repercussions in the next session of the General Assembly in January, when a powerful railroad and bus group maneuvered their "uniformed" legislation to passage by the state senate.

Aviation groups, caught almost unprepared, were forced into a fight against the railroad legislation instead of fighting for their own bill drawn by the State Aeronautic Advisory Board, headed by Cody Laird. The NARUC bill was defeated finally, but by that time the issue had been so confused that all action was shelved.

The history of the aviation legislation fight in Georgia stands as a warning to aviation interests in the other states of the South where similar tactics may be followed. Not only did the surface transport groups come near slipping their legislation through, but they prevented any favorable action on the act sought by the aviation people at a time when such legislation may be needed to make use of Federal airport funds. In addition, they succeeded in confusing the issues involved to such an extent that only a major campaign of education is going to clarify the situation enough for intelligent aviation in the General Assembly next winter.

Politicians Jump Gun

One of the most powerful factors in Georgia politics is Walter McDonald, chairman of the state Public Service Commission, McDonald has overcome the handicap of blindness to become an extremely influential behind-the-scenes figure — influential enough to stay in office more than ten years in an era when office holder's heads were rolling with every change of administration. McDonald is also chairman of the legislative committee of the National Association of Railroad and Utility Commissioners. He naturally was extremely interested in having his own state adopt the railroad-bus line measure.

Bringing plenty of heat to bear on legislators, McDonald succeeded in having his bill passed by the senate before activity of aviation groups forced reconsideration. On reconsideration, the bill was returned to the aviation committee for a public hearing, which McDonald had been successful in avoiding as the bill first moved for passage.

Meanwhile, the state Aeronautic Advisory Board, created by the legislature a year before, had prepared its own legislation. This bill was largely based on the successful Tennessee aviation law. Legislation of this type —in contrast to the NARUC bill— had received the backing of leading state citizens who had attended the State Aviation Clinic in Macon last fall, but there was no pressure drive behind it as there was on the NARUC act sought by McDonald.

Master-mind behind rail and bus fight for domination over Georgia aviation is Walter McDonald, State Public Service Commission chairman and strongly-entrenched political leader. McDonald, who is sightless, is also legislative chairman of the National Association of Railroad and Utility Commissioners.
—Bill Mason Photo.

However, this aviation bill remained bottled up in committee where Spence Grayson, of Savannah, who had introduced the NARUC bill for McDonald, was the dominating member.

At the public hearing, the NARUC act was strenuously opposed by airport operators, many of whom had so successfully operated contract schools for the Army Air Forces, CPT schools and other war training operations, and by George Cushing, operations manager of Delta Air Lines, and Charlie Bowden, mayor of Macon, chairman of the Georgia State Aeronautics Association and mayor of the air-minded central Georgia city. The influence of Governor Arnall (which may not be strong in the January session, for reasons which will be pointed out later), was thrown against the McDonald bill through a letter presented at the hearing by the Aeronautic Advisory Board chairman, Cody Laird.

The Arnall letter said, in part, that "Georgia has a great opportunity to become an outstanding aviation state and I would hate for our state to become the first in the union to restrict the development of this important new

(Continued on page 42)

Bill Key Joins Southern Flight to Cover the Southeast

WILLIAM G. KEY, well-known aviation writer, has become a contributing editor of SOUTHERN FLIGHT *for the Southeast, with headquarters in Fort Lauderdale, Florida. His monthly articles covering all phases of aviation activity will provide our readers an accurate, authoritative insight into developments in that important area.*

Bill Key has been covering aviation for the last fifteen years for such leading newspapers as the Atlanta CONSTITUTION, *Macon* TELEGRAPH *and Augusta* CHRONICLE. *He has been in Washington for the last two years, returning South from* AVIATION NEWS, *of which he was associate editor.*

William G. Key

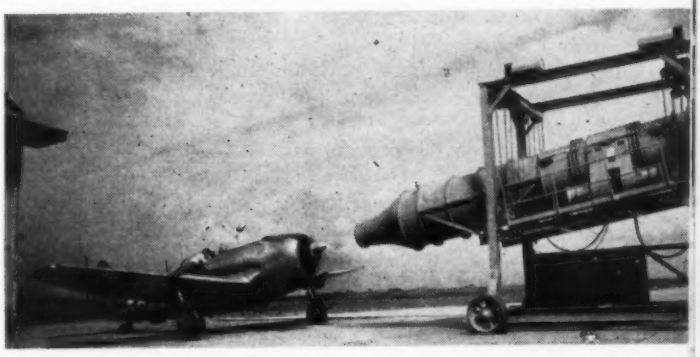
Jet propulsion research by NACA at Cleveland includes elaborate investigation of burners and studies to improve thrust. At left a technician adjusts thermocouples on a new jet burner design. In center photo is shown part of unique panel registering jet engine thrust, drag and five additional component forces. At right is shown a new jet fuel being studied as it burns in a plastic combustion tunnel. —(NACA Photos.)

Victory Through Research

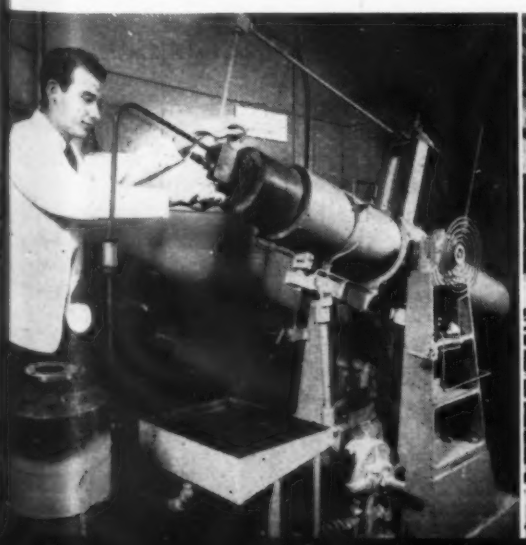
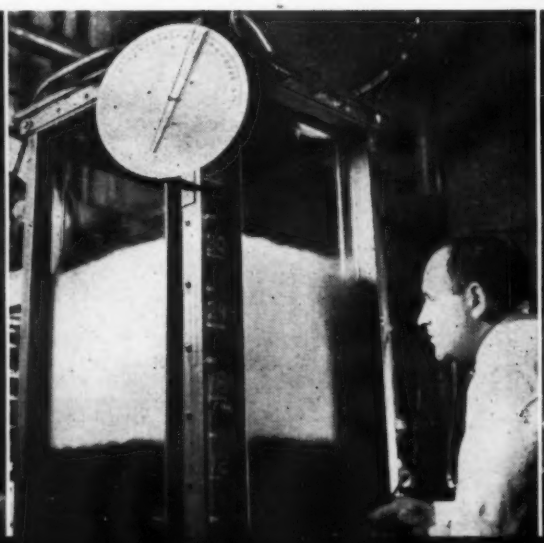
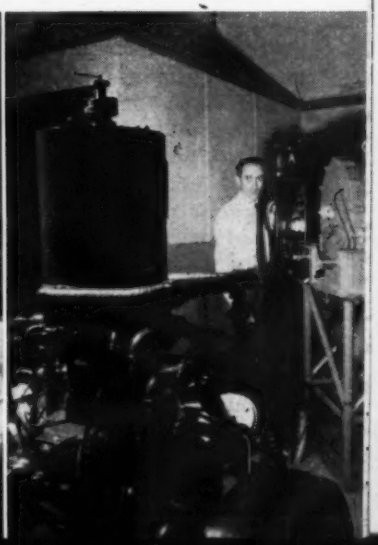
LOCKED in secrecy since shortly before Pearl Harbor, far-reaching technical accomplishments by the National Advisory Committee for Aeronautics have received little notice. As a kind of V-E Day bonus, NACA recently opened the doors of its great Aircraft Engine Research Laboratory at Cleveland, Ohio, to the Aviation Writers Association. They saw for themselves some of the far-reaching aeronautical strides already achieved and others now shaping up.

Photos on this page, first to be published showing recent NACA engine research, represent but a fraction of NACA activities. The Cleveland laboratories have become the well-spring from which flows the revolution now taking place in aeronautics. This revolution occurs first in aircraft propulsion, and new propulsion systems developed or improved here open up extraordinary possibilities which pose aerodynamic problems to be met by other NACA laboratories at Langley Field, Va., and Moffett Field, Calif. Engine research regions are vast and many, including high-temperature alloys for gas turbines and jet engines, more efficient compressor and combustion chambers, gas turbines and rocket power plants and fuels for supplying power. In addition, much improvement remains to be done in reciprocating-type power planes, and a considerable portion of NACA's Cleveland facilities is devoted to this end. These facilities include a 50,000-horsepower altitude wind tunnel, the only one of its kind in the world. With 30,000-ft. altitude conditions and 50,000-ft. pressures, it can duplicate humidity, temperature and pressures for testing complete power plant installations in winds up to 500 miles per hour. Cleveland's icing research tunnel provides a full range of conditions for testing propellers, power plants and other aircraft components in winds up to 400 miles per hour and temperatures as low as 60 degrees F. In addition, aircraft of all types and sizes are studied in actual flight. ★ ★ ★

Full-power engine operations on the ground are made possible by this huge NACA blower, a life saver for test pilots. Producing 250-mph. airspeed, it eliminates take-offs with untried engines.



Fuel chemistry, vaporization and combustion receive infinite study at NACA. At left is shown a "bomb" in which molecular structure of fuel is altered under pressure and temperature. The white stuff in center photo is gasoline being boiled not by heat but by pressure during a simulated climb. At right is a special NACA camera which photographs combustion at 40,000 frames per second.

CONFESSIONS of a Flight Instructor

By A. H. KNOUFF
Lt., A-V (T), USNR*

Illustrations by Lt. Joe James, USNR

"Many of the students to whom we never gave such simulated emergencies have had real forced landings."

PART IX

Four fundamentals govern safety in forced landings. Relax, establish your glide, plan your approach and don't change your mind. It's better to hit a brick wall than spin in.

IN the early days of CPT training, simulated forced landings were ranked second as a cause of accidents. I suspect this was due to the sudden increase in the number of instructors who jumped from the student to the instructor classification in a matter of weeks—who unconsciously felt that the words "flight instructor" on their certificates made them expert fliers. As far as I have been able to determine with my limited facilities, all of the fatal accidents resulting from simulated forced landings involved instructors with less than 500 hours, the average being about 300 hours.

As a result the government surrounded the teaching of forced landings with a lot of rules which detracted greatly from the dubious value of giving simulated forced landings at all. They were not to be given except where the landing could actually be made at a field which had been inspected and approved from the ground. They were not to be carried below an altitude of 200 feet. They were prohibited on the take-off.

I have never been sold on the idea of simulated forced landings. Prior to CPT I very seldom pulled the throttle on a student. Instead I concentrated on landings in a 100-ft. circle from every conceivable angle, and choosing a flight path which offered the best terrain for emergency landings. In the few cases when I did pull a simulated forced landing, it was because the student was not choosing his flight path wisely, and to get the point across I pulled it at a place where a real forced landing would be least likely to succeed. I let the student continue until it was obvious to him that the landing could not be completed.

I probably inherited my attitude toward simulated forced landings from Bob Swift, my instructor and later my partner. In the natural course of events, many of the students to whom we never gave such simulated emergencies have had real forced landings. In only one case was any damage done —about $25 worth, from hitting a small ditch in a field 125 feet square.

"The instructor should always remember the situation he is simulating might actually happen."

The damage and injury which have occurred in simulated forced landings are out of proportion to the real thing. I believe this is because the student depends on the instructor and the instructor depends on the engine. (Rather ironical, isn't it, when the instructor is supposed to be impressing the student what to do if that motor fails).

The instructor should always remember that the situation he is simulating might actually happen, and make his plans accordingly. There is more to it than just closing the throttle. He must figure out in advance what the student is likely to do or fail to do. The instructor must know how far he can let the student go, giving himself the benefit of the doubt on the side of safety, and what he will do if the engine actually quits or the student pulls something he isn't looking for. It is quite an order to fill, isn't it?

As an instructor gets older, the number of unexpected things a student can do becomes less, but the more the instructor realizes the possibility and danger of getting a surprise.

The first thing a student usually does when you pull the throttle is start a turn. Next he will try to keep the airplane from sinking by pulling the nose up. I got my lesson with one of my first CPT students. After several pretended emergencies, I thought he had learned to relax and establish a glide. To see whether he was watching out the right as well as the left side, I closed the throttle in a spot where we had a beautiful field on our right, but ahead and to our left was a hill and below was a small plot of grass surrounded by trees. My student pulled the stick all the way back and pushed full left rudder.

We were not much more than 100 feet up. I told him to "let go"—the

*Opinions and assertions herein are the author's, and are not to be construed as official or reflecting the views of the Navy Department or the naval services.

words I reserve for extreme emergencies. Although I figured a crack-up was a sure bet, I couldn't do anything about it until I got flying speed. So I literally let the ship fall (no pressure on the controls) until below tree-tops, where I gingerly eased back on the stick. I think our wheels brushed the grass before we leveled off, and I followed a small stream between the trees, not daring to climb over them.

I was luckier than those other inexperienced instructors. I was lucky that somehow it had been drilled into my subconscious that the first thing to do in any emergency is to *remain relaxed* even to the extreme of letting go of the controls completely.

Bob Chadwick, who came back recently from flying in China, often repeats an incident that happened when he was a student of mine in an instructor course. While pretending to be the student, I always watched the student-instructor for any indications that he was going to pull the throttle, so that I would be prepared to make the proper mistakes. My "instructors" were always trying to catch me unawares.

I had just taken off and established my climb, when Bob offered me a cigarette and took over while I lighted it. Just as I struck the match, he called "forced landing!" He says that I continued to light the cigarette while the nose dropped to a normal glide, then slipped to land in a small field. (I insist that I put out the match without lighting the cigarette.)

It was on the same field, in almost the same position, that another instructor had been killed in a simulated forced landing. The young instructor was considered an excellent pilot and good instructor. It was the first take-off on a cold morning. The student reacted poorly to the emergency, and the instructor allowed him to proceed until the last moment to prove his error. When the instructor opened the throttle the engine quit cold. He attempted to turn to avoid an obstacle. The wing hit the ground, the ship cartwheeled. His unlighted pipe pierced his throat and was the direct cause of his death.

This one accident illustrates several rules for simulated forced landings:

1. Never pull one on the first take-off. Be sure that the engine has time to warm up, and see that it is running properly.
2. On forced landings, as well as any other glide, keep the engine warm and clear by using throttle occasionally.
3. Allow a bigger margin of safety than you think you need.
4. Land straight ahead—don't try to maneuver—if the engine quits at low altitude.

"If you can so impress your student with these rules that they are the first he thinks of in an emergency, he will be able to handle the situation."

Although I don't believe in giving many forced landings in the air, I do believe in giving a lot of them on the ground. One of the things that has been lacking in the rush of wartime training is the hangar flying which gave the student a chance to ask questions at leisure and gave the instructor the chance to drive home points that might not arise in the normal course of the student's training flights.

One point to be stressed is that forced landings are not dangerous, if the pilot keeps his head and remains relaxed. The second is to do nothing until a normal glide has been established. Third is to remember that it is safer to hit a brick wall straight ahead than it is to hit the ground in a spin. In other words, do not turn unless you have to—at low altitude "have to" means almost never.

What do I mean by low altitude? Most students ask, "How high must you be before you can turn back into the field?" The best way to answer this is to have your student close the throttle in a normal climb and watch the altimeter while you establish a normal glide. Do the same from level flight. The result will surprise and impress him. The best verbal answer to these questions is, "If you have to ask yourself whether you have enough altitude to turn, don't do it."

That sounds familiar, doesn't it? That is because it is the basic axiom of flying stated in different words. When In Doubt, Do Nothing!

Just the other day a small plane took off from the Atlanta airport with something apparently wrong. It failed to climb normally, and at about 100 ft., staggered along without gaining any more altitude. Just before it reached the edge of the field it started to turn and dived into the ground. It is true that it might have hit some airplanes parked on a ramp directly ahead, but probably none of them would have been wash-outs, and the student and the instructor would probably not have been injured seriously. Most surprising thing about this accident is that the instructor did not close the throttle and land immediately, when he still had plenty of room.

RELAX!
ESTABLISH A NORMAL GLIDE!
PLAN YOUR APPROACH!
DON'T CHANGE YOUR MIND!

These are the four rules you must repeat over and over to your students just as I have repeated them here. If he does nothing until he has planned his approach, he will know whether or not he has enough altitude to maneuver. Once he has planned his approach, he should stick to it. He may see another field that looks better than the first one he picked, but by the time he has planned a new approach to the new field, he may not have enough altitude to get into it. In hurriedly revising his plan, he may make errors of judgment, or even forget to maintain speed control which will throw his judgment off or stall him in.

If you can so impress your student with these rules that they are the first thing he thinks of in an emergency, he will probably be able to handle the situation even if you never give him a "forced landing" in flight. ★ ★ ★

Let's Make It a Flight Forum

Lieutenant Knouff would like to make this series of articles a forum for presenting other instructors' opinions, as well as his own. A large number of readers, including students as well as instructors, have found his opinions interesting. If you disagree, if you would like to discuss some point more thoroughly, or if you have some instruction problem on which you would like Lieutenant Knouff's slant, drop him a line, in care of SOUTHERN FLIGHT, *P. O. Box 750, Dallas 1, Texas. He and the Editors will appreciate hearing from you.*

Postwar Outlook For Aircraft Instruments

PART II

More efficient fuel consumption, better power utilization and more dependable navigation are some of the benefits commercial aviation can obtain from war developments.

By ESTHER H. FORBES

WARTIME developments in aircraft instruments can be divided broadly into two main types. One is the designing of entirely new instruments to keep pace with the new needs of aerial combat. The other is the redesigning of instruments which had already been in existence in one form or another before the war.

Developments of the latter type have been by far the more numerous and more applicable to civilian flying. The Eclipse-Pioneer Division of the Bendix Aviation Corporation, however, has made six important new contributions to instrument design since the beginning of the war. These are the development of a brake mean effective pressure gauge, a "magnesyn" remote indicating system, an air position indicator, a gyro horizon, an attitude gyro and an automatic pilot. The last three are included in the second category because, although instruments performing the same functions had previously been designed and produced by the Sperry Gyroscope Company, they represent a new field of development for Pioneer and are of different design.

Of the six, all but the air position indicator will probably see wide use on commercial airliners soon after the war. In the more distant postwar future two may be expected on the average private plane. These are the gyro horizon, which will be used first, and the automatic pilot, which will probably not appear in private planes until considerably later but which may help to revolutionize private flying.

Brake Mean Pressure Gauge

The purpose of the brake mean effective pressure gauge (commonly referred to as BMEP gauge or torque meter) is to measure the reactionary torque of an engine. Since the amount of torque and the number of revolutions per minute determine the horsepower output of an engine, and the amount of gasoline used represents the horsepower input, the efficiency of any given engine can be calculated if these three factors can be measured. Formerly, however, only the rpm. and the amount of gasoline could be measured, by a tachometer and fuel flow meter respectively. Now the development of the BMEP gauge makes it possible to measure torque, too, and thus to obtain more accurate cruising control.

This is vitally important to members of a long-range bomber crew. If they can be sure of knowing they are getting the maximum efficiency out of their engines, they can carry a minimum gasoline load and a maximum bomb load and still have enough gasoline to get home safely. The longer the plane is in the air, the more important this becomes. The same is true of an airliner, where efficient consumption of gasoline brings in the greatest possible revenue by enabling the plane to carry the maximum payload. Thus the torque meter will probably become a necessity for long-range transoceanic and non-stop transcontinental airliners after the war. For domestic airliners and private planes it would be less essential but definitely useful as a means of indicating development of rated horsepower, particularly during take-off.

With the development of large aircraft in which the engines and other important mechanisms were far removed from the cockpit, it became necessary a number of years ago to devise a means of obtaining instrument indications without extending long mechanical shafts or metal tube connections from the engine, landing gear, or what have you, to the cockpit. Pioneer's answer to the problem was the autosyn system of remote indication, consisting of a transmitter and receiver joined by a simple electrical wiring. Eliminating as it did the necessity for running combustible fuel and oil lines into the cockpit, it soon became widely used on large planes for indicating oil temperature, oil pressure, manifold pressure, rpm.'s, fuel pressure, fuel quantity and fuel flow as well as compass readings, landing gear position, cowl flap position and landing flap position. Thus, it simplified the installation of many instruments and at the same time contributed significantly to safety.

Each autosyn system, however, was comparatively large, heavy and expensive for the job it performed. Therefore, Pioneer engineers set to work to design a new system of remote

Air Position Indicator

indication, which they call the "magnesyn" system. Basically the two operate on the same principle, both the transmitter and receiver of each having a rotor and stator. The rotor of the receiver, or indicator, is designed to move the necessary distance to match any movement of the rotor of the transmitter. With the autosyn, these two rotors must be energized by alternating current. The magnesyn, on the other hand, has permanent magnetic rotors which require no energizing.

The result is that a magnesyn system will last much longer since it is subjected to less wear and tear. Moreover, it can be built to about one-tenth the size of an autosyn system, is lighter and less expensive. Therefore, magnesyn systems will undoubtedly be used by the airliners for all the same functions as mentioned for autosyn systems as well as for indications of new instruments such as BMEP gauges and propeller pitch indicators, another current Pioneer development. It is improbable, however, that they will have much application for the private flier since most private planes are small enough for direct indication to be quite adequate.

Pioneer's most talked-of wartime development is probably the air position indicator. Unfortunately some of the first news stories about the API were overenthusiastic and gave the impression that it could do the whole job for the navigator. This led to an unfavorable reaction against it by many people who called the whole thing a farce, pointing out that it could not calculate for wind drift and deducing that it was therefore useless.

Actually, of course, the API cannot do the whole job for the navigator, as Pioneer engineers have always emphasized. But it can help the navigator considerably by making many laborious computations for him. Specifically, what it does is to record air mileage, much like a speedometer on an automobile, and also latitude and longitude. To give air mileage, a true air speed indicator and a clock are incorporated in the instrument, plus a computing device which multiplies rate times time to give distance. To give latitude and longitude indication, a compass and another computing device are also incorporated, plus still other devices to correct for differences in distance between the meridians of longitude as they approach the poles.

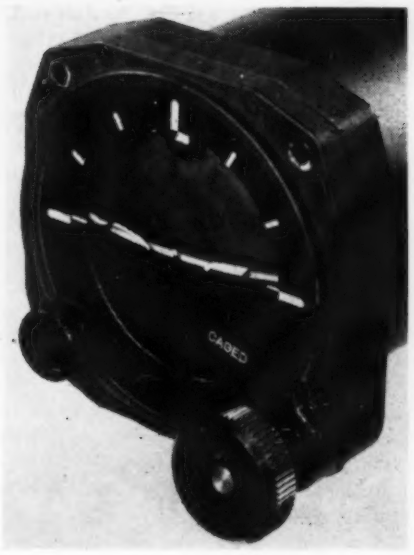
Peacetime application of the API will be similar to the military. The Army uses it only for long-range operations over water or over foreign territory with no familiar landmarks. Likewise, the airlines will probably find it profitable for use only over long transoceanic routes. In its present form it weighs forty pounds and, though it will probably be reduced some in both weight and size later, Pioneer engineers believe it will probably remain fairly heavy. Therefore, except where it can add considerably to safety — on long-range flights where radio aids are unavailable — the airlines, not to mention private fliers, will not wish to sacrifice the equivalent weight of useful load.

Auto Pilot Turn Indicator

On the other hand, the three gyroscopic instruments developed by Pioneer during the war will have wide application as navigational instruments for civilian flying. The gyro horizon is already being used commercially. Though at present it is fairly expensive, it can probably be brought within the price range of the average private flier, who will find it extremely useful for instrument flying. Its outstanding feature is that it is electrically driven rather than air driven. This fact becomes particularly important when it is used as part of the automatic pilot.

The gyro horizon, turn and bank indicator and gyro flux gate compass are the three principal components of the automatic pilot, offering the controls for it. All of them operate on alternating current. This serves both to keep the speed of rotation constant and to prevent dirt from entering the mechanism as happens with air-driven instruments. Moreover, since there are no other air or hydraulic driven mechanisms, the design of the pilot is considerably simplified. Its operation, too, is simplified by the incorporation of the gyro flux gate compass rather than a directional gyro. Being gyro-stabilized, the flux gate compass does not require resetting, and consequently the automatic pilot flies on a constant magnetic heading.

The advantages of this type of automatic pilot should make it extremely attractive to the airlines, which will undoubtedly wish to replace their old models with new models such as this developed by Pioneer.



Gyro Horizon

Flux Gate Master Indicator for Auto Pilot

Pioneer hopes, too, to make a compass of this type easily available to private fliers. The one which it is now producing for the Army and Navy is practically prohibitive to the private flier since it weighs about twenty-five pounds and costs many hundreds of dollars. But the company believes it will be able to redesign it to make it about one-half as large and one-half as heavy and considerably less expensive. Since it is generally agreed that the private flier must have an automatic pilot if he is to be able to take advantage of the radio aids which have been developed during the war, such an instrument might well introduce a new era of utility in private flying by making flying practical for the average flier in instrument weather.

Of relatively little importance to

(*Continued on page* 60)

PRIVATE FLYING ROUNDUP

(Continued from page 31)

a development has been expected of Stinson because Consolidated Vultee some time ago negotiated a long-term contract with William B. Stout, the nation's foremost roadable airplane proponent, for aircraft research.

Welsch has also revealed Stinson's plans for standardizing parts, instruments and accessories on Stinson planes to simplify spares procurement and to improve maintenance. It will be launched with a sales service and sales training course.

"The Stinson plan is being patterned after the automobile industry," Welsch said. "It is our intention to create an organization that will make the servicing and repairing of Stinson aircraft as simple as caring for the family automobile." The Stinson distributor-dealer organization is being mapped now, and every authorized dealer will be a repair and service representative for the company's products. Spencer Leech and C. W. (Slim) Frietag, widely-known veterans in aircraft sales and service, form the nucleus of the new organization Welsch is setting up. Leech will be Eastern representative with New York headquarters; Frietag will cover the Midwest out of Chicago. Other regional heads will be named later.

Vast Expansion Seen by Mara

William A. Mara, Bendix Aviation Corporation executive in charge of personal flying developments, is one of the most astute operators in the business. One of the pioneers of private flying, he hasn't gone overboard in his postwar predictions yet, and a host of observers and dealers look to Mara for cautious advice. Now comes Mara with some pretty big figures in a forecast of private flying expansion. He insists he is being "extremely conservative" by estimating America will have a minimum of 3,500,000 licensed private fliers by 1960—if progress since 1929 continues at the same rate.

Here's how he makes his estimate: There were 107,327 personal pilots at the end of 1944. This was an increase of 2,600 per cent over the 4,162 licensed private pilots listed by the CAA in 1929. At the end of the war, Mara says, we will have a pool of some 6,000,000 active or potential fliers, of whom 500,000 will have been trained to fly airplanes. These include 107,327 private pilots holding CAA licenses at the end of 1944, 25,000 licensed transport and commercial pilots, 159,000 pilots listed as trained by the Army Air Forces as of December 1, 1944, and 47,000 pilots listed on the U. S. Navy roster as of December 1, 1944. These figures do not include thousands of pilots still in various stages of Army and Navy flight training, or thousands of student pilots certified by CAA in recent years, or some 19,000 certified aviation mechanics, or thousands of men and women currently taking flying lessons at civilian schools.

130-hp. Bellanca Cruisair

Shooting for a 1946 sales goal of between 500 to 1,000 planes, Bellanca Aircraft Corporation is revamping the basic prewar Cruisair design into a new four-place airplane with 130-hp. Franklin engine and a cruising speed of more than 130 miles per hour. The first 1946 Cruisair has undergone considerable testing, and demonstrators are expected to reach distributors by October, with a slight chance of deliveries to consumers near the end of 1945. Certain Bellanca war contracts are expiring soon, and Cruisair production may gain momentum during September or October. The low-wing Bellanca probably will sell for approximately $4,500.

Surplus Engines Next?

Highlighting developments in the Defense Plant Corporation's disposal of surplus aircraft was a reliable report that surplus aircraft engines in the lower power brackets probably will be placed on the market soon. Indications are that the power plants, a considerable number of which are already spotted at sales depots around the country, will be offered on a bid basis.

Sales of primary trainers are steadily increasing, and growing interest is being shown in surplus UC-78, twin-engine Cessnas. Aircraft sales and service operators have been advised by surplus aircraft disposal offices that CAA approval of a 5,700-lb. gross weight for converted Cessna UC-78's has been granted. Formerly the twin-engine Cessna was licensed for 5,400-lb. gross. Recent CAA tests showed the increase could be satisfactorily obtained by modifying the flap installation to provide for forty degrees of flaps for landing instead of thirty-five degrees normally used. This decreased the full-load landing speed from 66.8 miles per hour to 65 miles per hour, the maximum allowable for full loads.

Eight additional models of surplus airplanes are undergoing CAA tests for possible certification. They include North American BT-14, BC-1A and BT-9C; Noorduyn UC-64; Douglas UC-97, C-38 and B-18, and Northrop A-17-A. The North American models are single-engine trainers developed prior to the AT-6, the Noorduyn is a 650-hp., five-place high-wing slightly larger than the more familiar Howard, the Douglas models are twin-engine planes of airline size, and the Northrop is the old single-engine, two-place, low-wing attack plane which preceded the Douglas SDB and A-24.

As of early June, the CAA had approved a total of 125 types of surplus airplanes as being suitable for certification upon individual compliance with requirements. They include:

Taylorcraft: L-2 (DC-65), L-2A (DCO-65), L-2B (DCO-65), L-2C (DC-65), L-2D (DC-65), L-2E (DF-65), L-2F (BL-65), L-2H (BC-12-65), L-2K (BF-12-65), and L-2M (DCO-65).

Aeronca: L-3 (65-TC), L-3A (0-58A), L-3B (0-58B), L-3C (0-58B), L-3D (TAF-65), L-3E (TAC-65), L-3F (65-CA), and L-3G (65-LB).

Piper: L-4 (J3C-65), L-4A (J3C-65), L-4B (J3C-65), L-4C (J3D-65), L-4D (J3F-65), L-4E (J4E), L-4F (J5A), L-4G (J5B), L-4H (J3C-65).

Interstate: L-6 (S-1B1).

Stinson: L-9B (10A), L-12 (SR-5A), and L-12A (SM-7B).

Beechcraft: AT-7, AT-7A, AT-7B, AT-7C.

Boeing: N2S-1 (A-75N-1), N2S-3 (A-75N-1), N2S-4 (A-75N-1), PT-17 (A-75N-1), PT-17A (A-75N-1), and PT-27 (D-75N-1).

Cessna: AT-17 (UC-78) (T-50).

Fairchild: PT-19 (M-62A), PT-19A (M-62A), PT-19B (M-62A), PT-23 (M-62A), PT-26 (M-62A-3).

Ryan: PT-22 (ST-3KR), PT-22A (ST-3KR).

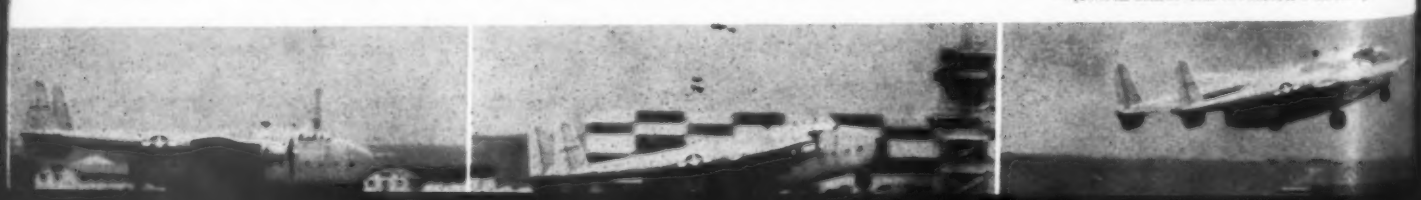
Navy: N3N-3.

Douglas: C-32A (DC-2), C-34 (DC-2), C-47A (DC3-S1C3G), C-49 (DC3-G202A), C-52 (DC3A-S1C3), C-53 (DC3-S1C3G).

Lockheed: C-57 (18-08), C-59 (18-07), C-60 (18-56), JO-2 (12A), UC-36A (10A), UC-40 (12A), UC-40A (12A). ★ ★ ★

LEAPIN' LENA FOR SMALL AIRPORTS is Fairchild's 50,000-lb., twin-boomed C-82 Packet. These movies show the big cargo plane in a jump takeoff at Dallas, where North American Aviation, Inc., is building a large number for use in the Pacific war. Only 300 feet of runway is covered by the photos. Note height of tail at start of takeoff. Second photo shows nose rising sharply and tail dropping almost to runway as Fairchild Pilot Dick Henson hoists her up. Third scene shows continued climb, without levelling off. No flaps were used on this blimp-like takeoff, Henson relying mostly on tremendous power of twin Pratt & Whitney R-2800-C engines, which are rated at 2,100 hp. for takeoff. Plane was empty and weighed only about 30,000 pounds.

—(North American Aviation Photos.)



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Tomorrow I'll fly my own all-metal SILVAIRE!"

Today's aerial warfare has proved one thing beyond the shadow of a doubt:

All-metal construction, in a plane, provides a "plus" that pays off in maximum durability . . . precious miles per hour added to air speed . . . and improved economy of operation.

The boys who fly today's all-metal military planes know this. And you, too, should bear it in mind when, some exciting day after Victory, you decide to buy your own personal plane.

On that day, look first to Luscombe—pioneer builders of all-metal personal planes. For Luscombe will offer you a thrilling postwar version of the famed SILVAIRE, long known for its ace-high performance, low upkeep, and high resale value.

This sleek all-metal SILVAIRE will be an extremely airworthy, safe, family plane—a beauty that will win your heart from the very start. And the price will be right down where you want it! For further information, simply mail the coupon.

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Our only job today is war... utilizing our experience in all-metal fabrication to provide vital parts and sub-assemblies for some of the United Nations' most famous war planes. When peace returns, we shall add this wartime experience to the knowledge we gained in pioneering all-metal construction, to give you a new SILVAIRE even finer than the pre-war plane that proudly bore that name!

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☐ Please tell me more about the SILVAIRE.
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Name_____

Street_____

City_____

READING THE WEATHER

(Continued from page 33)

South West wind at 12 miles per hour.

If the velocity value is followed by a plus sign (25+), it indicates that the wind is 25 miles per hour with strong gusts. If there is a minus sign (25-), it indicates a 25-mile-per-hour wind with light gusts. The absence of either a plus or minus indicates the wind is blowing at a constant value. The plus and minus signs can be important, especially on making a landing at a strange airport or at any airport. If there are strong gusts present, you should be aware of the fact and take the necessary precautions, otherwise, you might be embarrassed by digging a wing tip or at the least make a very bumpy landing.

014

Altimeter Setting. Once more we are going to discuss barometric pressure. This time however, we deal directly in inches of mercury. We mentioned before that the meteorologist converted inches of mercury to millibars in order to have a finer check on the barometric pressure changes. This sluggish movement of the mercurial barometer makes it easy to decode altimeter settings into its full value. Here again we have only three numerals; to decode, we move the decimal place over two places and add a two or a three keeping it as close to 29.92 as we possibly can. (2992 is the average barometric pressure).

EXAMPLES:	Inches of Mercury
998 equals	29.98
850 equals	28.50
000 equals	30.00
010 equals	30.10

The pilot should be aware of any large difference in settings from take-off to the point of destination; this is especially important if his flight is to be over mountainous country. Crashes due to pilot error with respect to altimeter settings are inexcusable.

It might be well to remember that often times you will notice that the millibar reading and the altimeter setting is missing from the Sequence Report. This is due to the fact that many stations are not equipped with mercurial barometers. In this case the pilot should check the latest weather map and in this way he will be able to determine the type of pressure in which he will be flying.

VSBY DCRSG

The last section of the sequence report is known as the "remark" section. It contains any information that hasn't already been included in the report. This information is always in an abbreviated form. Example: PIREPS TS TM NW—Pilot reports thunderstorm North West .... VSBY DCRSG — Visibility decreasing. In order to be able to decode this information, it will be necessary to have a list of the abbreviations and their meaning. This list can be obtained from the United States Weather Bureau.

BINOVC	Break in the Overcast
BRONO	Broadcast not operative
ICG	Icing
MSL	Mean Sea Level
RANOT	Range not operative
FCST	Forecast
IOVC	In the Overcast
TS TM	Thunderstorm
PIREPS	Pilot reports
QTR	Quarter
QUAD	Quadrant
RGD	Ragged
SCTD	Scattered
TOVC	Top of Overcast
VSBY	Visibility
CAVU	Ceiling

WARNING FROM GEORGIA

(Continued from page 34)

industry. Accordingly, I am in full accord with the attitude of the Aeronautics Advisory Board and the attitude of those who are interested in the development of the air industry of Georgia in the position that this is no time to place the business under a state utility regulating body. There may come a time when such procedure will be desirable, but at this particular moment when we are trying to bring to Georgia more commercial airlines, build more airports and encourage the development of this business, I do not see any good that will come from the proposals now being considered by the Assembly which would restrict and regulate the development of this type of business in Georgia. Georgia is the natural hub of the Southeast and we should zealously guard the advantages that we have."

Railroad Issue Involved

It might be noted in passing that Arnall and McDonald have also tangled in the railroad rate parity question, with McDonald opposing Arnall's unique action taken in the Supreme Court of the United States to force lowered freight rates for the southern states. It may also be pertinent that McDonald and Roy Harris, now speaker of the state house who successfully fought a constitutional amendment which would have permitted Arnall to run for the governorship again next year, are both from Richmond County. So that actually whatever legislation is passed for aviation in Georgia, if any is passed, is inevitably tied into the whole muddled political situation. Harris, having defeated the effort to permit Arnall to succeed himself, is a candidate himself, and as an out-going governor who cannot return to office for at least four years, Arnall's influence in the January legislature will be virtually nil.

One mailing was made to state citizens interested in aviation warning that the legislation was before the General Assembly and urging opposition. It went out over the signatures of E. F. Howington, president of Aero Corporation; Cody Laird as president of Southeastern Air Service; H. W. Clay, president, Aviation Manufacturing and Sales Co.; Ike F. Jones, vice president of Southern Airways, Inc.; John F. Byrd, president of Blevins Aircraft Corp., and Al B. Richardson, executive committeeman, Georgia State Aeronautics Association.

The letter pointed out that the bill would only serve to "put aviation in the same category with busses and trucks, which are already notoriously snarled in interstate barriers and squabbles" (a situation which it took the war to straighten out, and which may return as soon as war conditions permit states to resume hamstringing bus and truck operations as they did before the emergency forced revisions of regulations).

Despite all this opposition, and despite the fact that not a single aviation interest spoke in favor of the bill, it was again reported favorably by the aviation committee under pressure of Grayson.

In the vote in the senate, where the Governor's position carried more weight, a substitute short bill was introduced and brought to vote. It would have turned over air commerce regulation to the Public Service Commission on a blanket basis. The bill failed of a majority and was therefore canned for the session.

The Aeronautic Advisory Board Bill got lost in the shuffle and went by default.

Both bills will come up again in January, but with Governor Arnall's influence greatly weakened unless there is a sharp change in the picture, the aviation people of Georgia are facing a far stiffer fight than that of this year.

The NARUC bill, having come near victory this year, can be expected to have the full pressure of the railroad and bus line interests thrown behind it (bus line spokesmen appeared in favor of the bill at the public hearing in the last session).

The best answer appears to be a grass roots campaign designed to enlist support of air-minded people and groups in Georgia in favor of the Advisory Board legislation. With the example of the successful Tennessee law to present, a potent and honest argument can be offered. Little has been done as yet, but some campaign is going to be necessary lest the McDonald group win their battle by virtual default.

For other southern states, the Georgia situation warns that constant vigilance against NARUC raids is necessary. ★ ★ ★

MODERN AIRPORTS

July, 1945

Vol. II No. 5

One of the nation's most conveniently-located airports is at Kansas City, Missouri. Located north of town in a bend of the Missouri River, Kansas City Municipal is only five minutes from downtown. Four major airlines use the airport, as do non-scheduled and personal plane operators. The terminal building is one of the most efficiently-operated in the country, with many conveniences and services to the public as well as the industry. W. T. Brown is commissioner of airports.

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APPROACH TO REALITY

Challenged to balance costs with revenues, airport managers are searching for practical standards to apply on fees and rentals. Here's one manager's trend of planning.

By TOM ASHLEY

WITH approach of the long awaited postwar upsurge in scheduled and non-scheduled aviation traffic, numerous airport owners and managers are making adjustments to their operating methods. Field and terminal expansion and improvement scheduled for earliest action are frequently combined with plans for improved airport revenues.

In the past it has not mattered too much whether a public-owned airport met its costs. The taxpayers have been co-operative in efforts to benefit aviation through airport projects — "if our city expects to have private flying, airmail and air passenger service we will have to build a fine airport." Inequalities in airport revenues and costs, and underhanded tricks by politicians within and without the aviation family, have too often been ignored or endured for the sake of what was pictured as aviation "progress."

Cities Are Waking Up

But the modern airport is changing all that. City fathers and taxpayers are learning that it is one thing to boost aviation by meeting some of the costs but quite another to give aviation a free ride when it is unduly expensive and no longer necessary. Airports are becoming business institutions, and the taxpayer is coming to realize aviation can afford to pay its just share of the developmental costs and still show progress. The record, available for all to see, shows that the most business-like airports are the most progressive and beneficial, not only for the municipal owners but for aviation interests which patronize them. Thus awakened, cities and their airport managers are hauling out old contracts and deals with a view of bringing them up to modern standards of business and efficiency.

Sources of airport revenues are increasing in number for the average airport. For many the airlines have been looked upon as the chief customer. But smart business leaders have demonstrated the profit possibilities in airport concessions to which the flying public and their local friends and spectators are attracted. Non-scheduled operators are good business, and the government, although it is not always as wise in its business relations as it should be, has become a large if not profitable customer.

The awakening has given rise to many new schemes and plans to balance airport revenues with operating costs. As yet there is no universal plan or pattern under which standard fees and rentals can be applied to all airports. Each city has its own plan of action. Out of the computing and confusion may emerge, some day, a fair and practical formula for charges.

As this is written an interesting bit of pioneering is under way in a well known city with one of the busiest airports in the country. The mayor is extremely airport-minded, and the manager is searching continually for ways and means to improve the field's operations and efficiency. We will not use names or identify any of the airlines or concessionaires concerned for the reason that the rentals and fees we want to discuss are now in the process of negotiation, and are being cited here not as recommended standards or satisfactory conditions, but as evidence of the trend of airport management pioneering and study. It is a process of trial and error, and as such it can be of interest and benefit to many throughout the country who are faced with similar problems.

Concessions to Pay More

Under airport costs, the manager has projected $13,200 annually in supervisory salaries for a director ($6,000), a manager, ($4,800) and a secretary ($2,400). The terminal building will require, he estimates, $16,000 annually for engineers and janitors and $18,000 annually for repairs ($3,100), supplies ($3,400) and light, heat and air conditioning ($11,500). Half of the supervisory salary budget is applied against terminal building, thus bringing the foregoing building costs to a total of $40,000 a year.

But current revenues from use of the building don't total that much—tenants pay $6,470 rent, airlines pay $9,230, and concessions pay $16,500, for a total of $32,200 building revenues, which are $8,400 less than the costs. To make up for this, the manager is proposing increased rentals and concession fees. Ticket counter space on the first floor, for example, would be raised from $3 to $5 per square foot, with rental space elsewhere on the first and second floors to be priced at $2 per square foot. The restaurant concession is being renegotiated with airport manager asking for 4 per cent of the gross business, which would more than double the annual revenue, bringing it to $13,400. The concessionnaire has already offered to raise the fee to 3 per cent, and that would represent a substantial increase over the current contract under which he pays a flat $6,000 annual rent. The newsstand is now paying 8 per cent of its gross to the airport for rent. This is being renegotiated upward to 10 per cent. Revenues from pay telephones, Western Union, rest rooms and barber shop are steadily increasing.

For field operations the manager estimates costs for the next year will total $69,600, and this is where some interesting figuring comes into the picture. The airport has a total of 631,000 square yards of paved runways and 150 acres of turf. The manager says the state highway department budgets its concrete road maintenance at an average of .043 cents per square foot. So he applies this average to his runways and lists $27,200 as the estimated annual cost of runway maintenance. He will have to mow the grass ten times during the year and it will cost him $1 per acre, so he lists $1,500 for grass cutting. Repairs to ruts, holes, etc., will cost $1,300, he estimates. That brings to $30,000 the cost of field maintenance. "Field operations" will cost $33,000, of which $3,000 is for maintenance of equipment and $30,000 is for control tower operations. The CAA is footing this bill at present, but the manager believes there is a possibility that the city soon will have to bear the costs, as has been known to happen elsewhere. And finally the manager charges to field maintenance and operations costs one-half of the annual supervisory salaries ($6,600), thus carrying the total to $69,600.

Landing Fees Inadequate

Current landing field revenues are far below such anticipated costs. No gallonage fees are charged on fuel sales, but in an effort to bring the operation up to par the manager intends to negotiate later for a service charge of about a penny per gallon. That will amount to quite a sum, because comparable airports are found to have total fuel sales of 4,500,000 gallons annually.

The chief source of field revenue is airline landing fees. Right now the three airlines using this airport pay a total of $5,060 annually, or 22 cents per landing on the average. One airline has an advantage over the others because it was successful in negotiating a flat $2,000 annual landing fee, which figures out at only 18 cents per landing. The other two average 25 cents per landing. Next year the air-

LANDING FEES AT TWELVE SELECTED AIRPORTS

	10 SCHEDULES			15 SCHEDULES			30 SCHEDULES		
	Month	Schedule	Landing	Month	Schedule	Landing	Month	Schedule	Landing
Birmingham	$ 350.00	$ 35.00	$1.17	$ 475.00	$31.67	$1.06	$ 850.00	$28.33	$ .94
Chicago	1075.00	107.50	3.58	1200.00	80.00	2.67	1575.00	52.50	1.75
Dallas	95.00	9.50	.32	120.00	8.00	.27	195.00	6.50	.22
Detroit	850.00	85.00	2.83	1150.00	76.67	2.56	1675.00	55.83	1.86
Indianapolis	650.00	65.00	2.17	775.00	51.67	1.72	1150.00	38.33	1.28
Kansas City	350.00	35.00	1.17	425.00	28.33	.94	800.00	26.67	.89
Los Angeles	800.00	80.00	2.67	1175.00	78.33	2.61	2300.00	76.67	2.55
Minneapolis	90.00	9.00	.30	115.00	7.67	.26	190.00	6.33	.21
Pittsburgh	1075.00	107.50	3.58	1200.00	80.00	2.67	1575.00	52.50	1.75
San Diego	250.00	25.00	.83	375.00	25.00	.83	750.00	25.00	.83
San Francisco	800.00	80.00	2.67	1050.00	70.00	2.33	1800.00	60.00	2.00
St. Louis	375.00	37.50	1.25	500.00	33.33	1.11	875.00	29.17	.97
Averages	563.33	56.33	1.96	713.33	47.55	1.58	1144.58	38.15	1.27

port expects an increase in airline schedules and has reason to believe they will total 27,000 for the year. Applying his estimated field costs, the manager finds these landings will cost the city $2.58 each. But the city is only charging 22 cents per landing at present, so a raise in fees is proposed.

Fixed Fees Proposed

It is in landing fees that airport management is most seriously challenged. They differ all over the country, and, as shown above, even on the same airport when several airlines are served. This wide variance is shown in the accompanying table. The reason is that varying factors enter into such negotiations. The general practice is to use a sliding scale contract starting with a higher price for the first landing and graduating down depending on the number of landings. The manager of the airport being discussed here believes a flat fee should be fixed, since the sliding scale penalizes the airline that begins with a small number of schedules. He has recommended renegotiation and establishment of a fee of more than $2.58 per landing, which he estimates as the actual cost to the city when and if it has to operate the control tower.

"These figures would be used," the manager pointed out, "on the assumption that all aircraft would be of the DC-3 type weighing 24,000 pounds and carrying twenty-one passengers. The DC-4 will carry forty-two passengers and will weigh 48,000 pounds. Therefore the landing charge should be doubled for each DC-4 landing."

If, for example, the landing fee for a DC-3 is determined to be $3.15, the charge would average 15 cents per passenger seat. An airplane carrying twice as many passengers would thus pay $6.30 per landing. Or a fee could be charged on a poundage basis.

Other operators based on the field, according to the manager, should pay a field charge based on the amount of traffic they are responsible for and considering the size of the planes using the field. Short term contracts and agreements are preferred by the manager.

Progressive airports are essential to further the development of aviation, and trial and error pioneering in airport management can do much to improve conditions. Sensible and sound planning will evolve. Airport managers should receive the fullest co-operation from airport users. This business of airports is going to have to become efficient one of these days. Everyone concerned could do well to speed the inevitable transition. ★ ★ ★

DO YOU AGREE?

YOUR local Chamber of Commerce will vote in July on the following civil aviation policy prepared by the United States Chamber of Commerce.

Do you agree?

If not, you had better make some constructive recommendations to your local Chamber.

Here's the declaration of policy:

"Regulation of primary airlines under the Civil Aeronautics Act is generally adequate and there is no present need for state regulation. Regulation of contract air carriers, which will doubtless become necessary, should be such as will not hamper development. Scheduled feeder and local services which meet the test of public convenience and necessity and do not require government support should be authorized. Such services requiring support should be authorized on an experimental basis in a few localities and for limited periods. Fixed-base operators providing interstate service to the public should be required to obtain a simple federal permit, available with a minimum of formalities and without territorial restrictions except as necessary for safe use of the airspace. There appears to be no present need for state regulation of this type of service. Those engaged in passenger services should be subject to higher standards for plane inspection and qualification of pilots, and should be required to establish financial responsibility for personal injury and property damage liability.

"Private flying should be encouraged through the development of an adequate system of airfields, encouragement of widespread aviation education and simplification of regulatory requirements. Expanded peacetime aviation training should be developed, including increased attention to aviation in regular school and vocational courses, specialized ground training and actual flight training. A continuing program of aviation research adequate for the national needs should be provided for by the government to supplement such work by the aviation industry, educational institutions and other private research agencies. The work should be mainly allocated to private agencies under supervision and co-ordination by an overall national research body.

"The airways system should be promptly modernized in accordance with the new technical developments resulting from the war. Development of airports and other landing facilities to meet postwar needs should be worked out through a federal-aid system on a basis commensurate with reasonable needs, the initiation and planning of projects to be the primary responsibility of the states in co-operation with federal and local authorities.

"The federal aviation authority with substantially its present responsibilities and powers should be re-established as an independent agency reporting directly to Congress but with provision for separate investigation of air accidents. In the present condition of aviation development states should concentrate efforts on airport matters and other aviation promotional work and should limit regulating activities to the minimum necessary to meet definitely established needs."

Airport Planning for Private Flying

PART II

Layout, Grading, and Drainage

THE layout may be considered as the master plan of the airport and should indicate the maximum proposed development of the site showing landing strips, runways, taxiways, building areas, parking areas, park development, and access roads. This master plan is essential to the efficient development of the airport even though the initial development may consist only of blading off two or three landing strips, erection of a small hangar, and marking the field so that air activity may be initiated. It is apparent to all that minor construction undertaken at any time should fit into the ultimate plan so that every building constructed or improvement undertaken will contribute to the final improvement and will not be discarded at some later date.

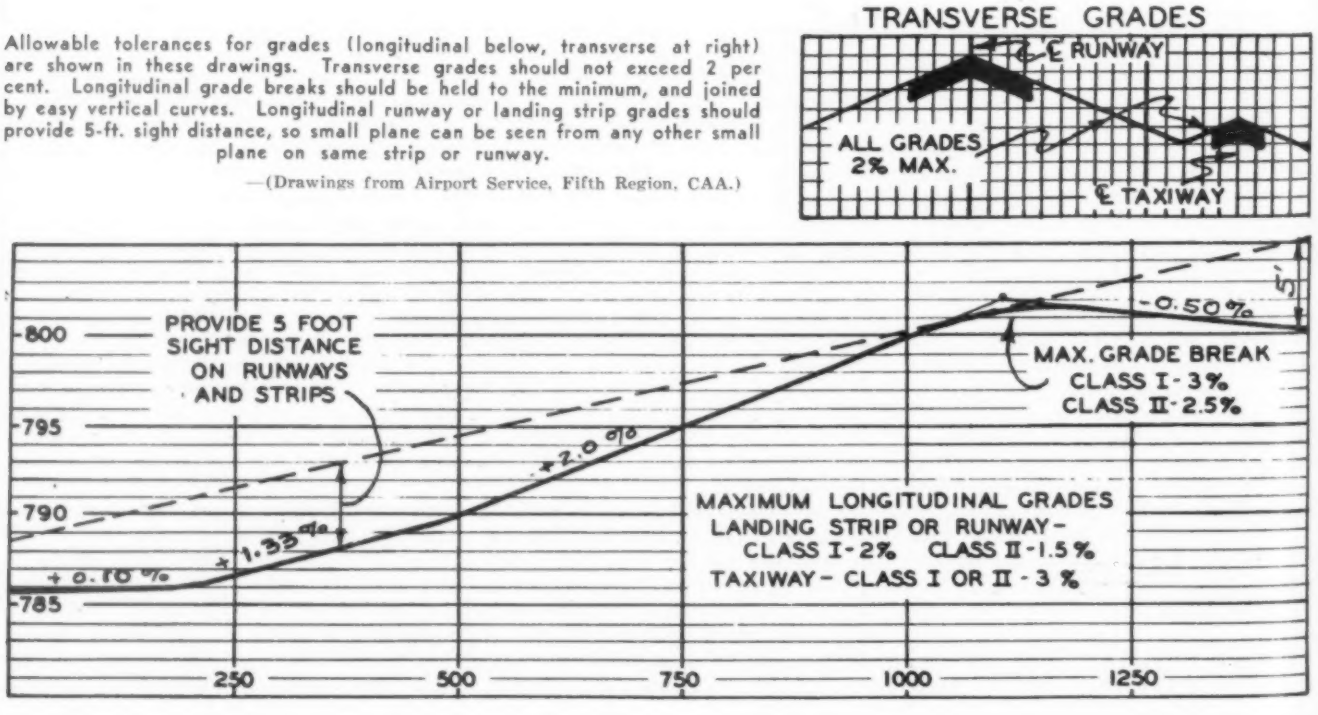
To prepare a satisfactory layout it is necessary that a topographic map of the airport site be prepared. This map should show the contours of the ground with a contour interval of one or two feet and should be drawn to a scale of one inch equals 200 feet. With such a map the layout may be made so as to take full advantage of favorable topography thus materially reducing the cost of development. The preparation of such a map will require the services of the city engineer, county engineer, or a consulting engineer and will involve some expense. However, the small expense involved will be saved many times over by adhering to a planned development program. The engineering investigation necessary to the preparation of such a map should also develop information as to the location and height of obstructions adjacent to the airport in order that these limiting factors may be considered in the layout.

The distribution of winds around the compass will indicate the number of landing strips to be developed and the relative importance of each strip. It is unlikely that detailed wind data will be available for a particular site; however, the Weather Bureau has collected wind data at many points throughout the United States and these data have been assembled and plotted in the form of "windroses" showing the percentages of winds from eight or sixteen points of the compass and separating these winds into calms, zero to three miles per hour, winds four to fifteen miles per hour, and winds over fifteen miles per hour. Upon the accompanying outline map of Arkansas, Louisiana, New Mexico, Oklahoma, and Texas, the locations for which windroses have been developed have been indicated and a less detailed form of windrose has been plotted for each location. With this information and from local observations a rather accurate evaluation of the wind characteristics for a given site may be arrived at upon which to base the local plan.

In preparing the layout, certain minimum requirements as to distances between runways and taxiways, runways and buildings, parallel runways, etc., should be adhered to. The minimum requirements have been developed from detailed study of existing airports and present and proposed types of aircraft. These minimum dimensions are set forth in the accompanying table of recommended standards. It must be borne in mind that the clearances should be established for the maximum class anticipated. If the maximum development of the site is to be Class II and the initial development Class I, then the clearances for a Class II airport should be adhered to in the initial development.

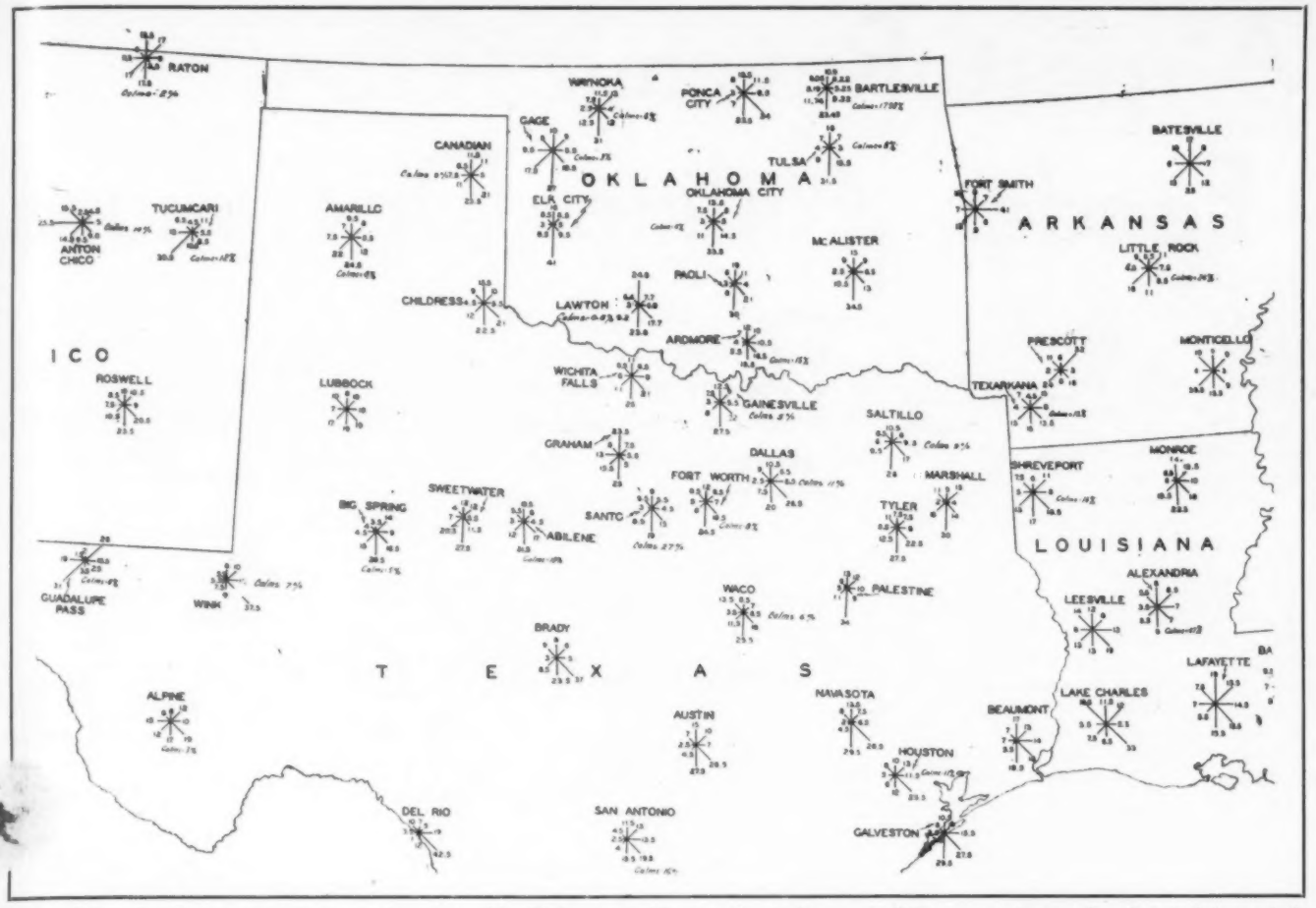
Grading

On many sites little or no grading will be necessary to initiate operations. Many small airports may be placed in operation merely by smoothing off one, two, or three landing strips. However, as traffic develops



Allowable tolerances for grades (longitudinal below, transverse at right) are shown in these drawings. Transverse grades should not exceed 2 per cent. Longitudinal grade breaks should be held to the minimum, and joined by easy vertical curves. Longitudinal runway or landing strip grades should provide 5-ft. sight distance, so small plane can be seen from any other small plane on same strip or runway.

—(Drawings from Airport Service, Fifth Region, CAA.)



Parts of five Southwestern states are shown on this CAA map with actual windrose conditions superimposed. By studying windroses of surrounding area, one can estimate fairly accurately the wind conditions which would prevail at small communities not listed. Peculiar local conditions such as mountains, hills, etc., would create special wind conditions, however, which will have to be met. —(Drawing from Airport Service, Fourth Region, CAA.)

and funds become available, some improvement in the form of additional grading may be desirable. A rough plan of the ultimate grading should be developed in order that final grades may be adhered to in all stages of development, thus eliminating the necessity of adjusting building elevations at some future date. This matter will be of little importance on level sites where the extension to ultimate dimensions will closely parallel the natural ground but on sites involving considerable excavating and filling, the establishing of grades for the final work will be of great importance.

The primary objective of the grading plan is to provide suitable grades for the operation of aircraft; however, this plan must also take into consideration proper sight distances or visibility requirements; improvement of the drainage; improvement in the supporting capacity of the field areas and the development of a topsoil capable of supporting vegetative growth.

The grades satisfactory for airports in general vary with the type of traffic and class of airport. While perfectly level sites might be desirable from an operational viewpoint, such a solution would in many cases be very costly and might also prove unsatisfactory from the standpoint of drainage. On the other hand excessive grades complicate and endanger operations and may result in erosion from surface water. For Class I and Class II airports, a maximum grade of 2 per cent is recommended, both longitudinally or along the length of the landing strip or runway, and transversely, or at right angles to the landing strip or runway length.

Sight distances or visibility requirements on an airport are necessary to safe operations. It is desirable that a pilot in a plane on the airport be able to see any other plane on the landing area. It is necessary that all planes on the landing area be visible from the control tower if and when such tower is installed. Since Class I and Class II airports are designed for the private owner airplane, in which the pilot's eye level may be as low as five feet above the field level, it is desirable to provide visibility such that a pilot in a plane with eye level five feet above the surface may be able to see any other plane five feet in height at a distance of 2,000 feet. This requirement may be applied to the entire field area or to each individual landing strip or runway.

(*Continued on page 59*)

Table Showing Recommended Minimum Standards for Class I and Class II Airports

ITEM	Class I	Class II
Length of Landing strips (at sea level)	1800-2500′	2700-3700′
Length of Runways (at sea level)	1800-2500′	2500-3500′
Width of Runways — day operation	50′	75′
Width of Runways — night operation	75′	100′
Width of usable landing strip	300′	500′
Width of taxiway pavement	25′	50′
Width of usable taxiway strip	50′	100′
Distance between parallel runways or landing strips center line to center line	300′	500′
Distance between runway center line and near edge of parallel taxiway	150′	250′
Distance between center line of runway or landing strip and near edge of apron	150′	250′
Distance between center line of instrument runway and near edge of apron	300′	500′
Distance between center line of runway or landing strip and airport buildings	250′	350′
Distance between center line of instrument runway and airport buildings	500′	750′
Distance between center line of taxiway strip of pavement and obstructions	75′	100′
Distance from end of runway to end of landing strip	100′	100′

Airport Revenue From Feeder Airline Operations

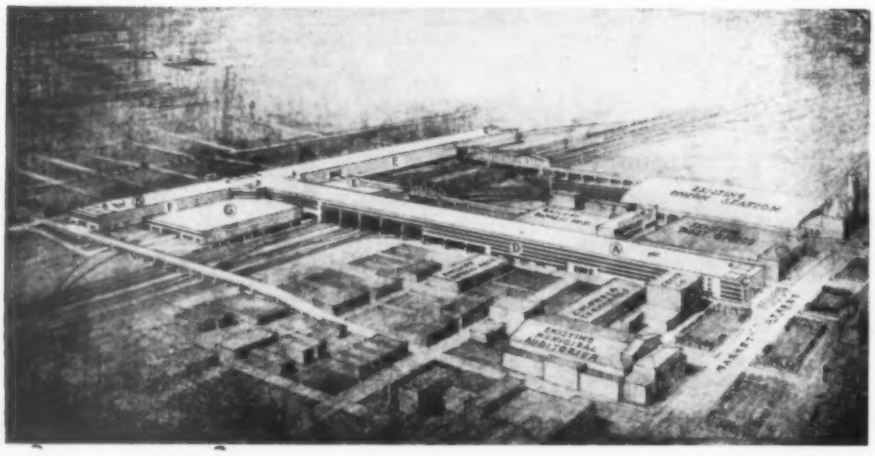
Airport fees are being overlooked by feeder applicants and cities. Impractical deals and dissatisfaction will result. All concerned should face the problem now if operations are to prosper.

By JOHN H. FREDERICK

THE Civil Aeronautics Board has been busy hearing the applications of literally hundreds of proposed airlines anxious to render local or feeder service to the smaller communities of the country. Among many other exhibits that have to be presented to the Board by these applicants is a statement showing their estimated income and expenses on the proposed routes for the first and second years of operation. In these estimates the applicants include nearly all the traditional costs of operation but in none so far examined by the writer has there been anything provided for airport expenses, such as rental of space in terminal buildings, landing fees and the like.

In conversations with many feeder line applicants during the course of the hearings in the Rocky Mountain, Texas-Oklahoma and North Central States cases the attitude seems to have been three-fold: (1) The small towns proposed to be served will be so glad to get a direct air service that they will provide airport services without charge; (2) applicants expect to pay something at the larger cities, the terminal points at which they will connect with the trunk lines; (3) smaller towns, which by far outnumber the larger on all proposed feeder routes, are assumed to be in a position of wanting to foster air transportation so badly that they will give airport services away.

The applicants have, of course, been encouraged in these attitudes by some of the towns proposed to be provided with direct air service for the first time. Chambers of commerce have been guilty of encouraging such ideas, but on the other hand there are those airport managers in the smaller communities who would like to consider the use of their facilities by a certificated carrier as a source of income. This would be a welcome added source of income to the airport, which by virtue of its being located in a smaller town has but a limited number of income sources at present. These airport managers think that even a new airline should pay something for services received or if no charges are made that this should be for a very limited time.

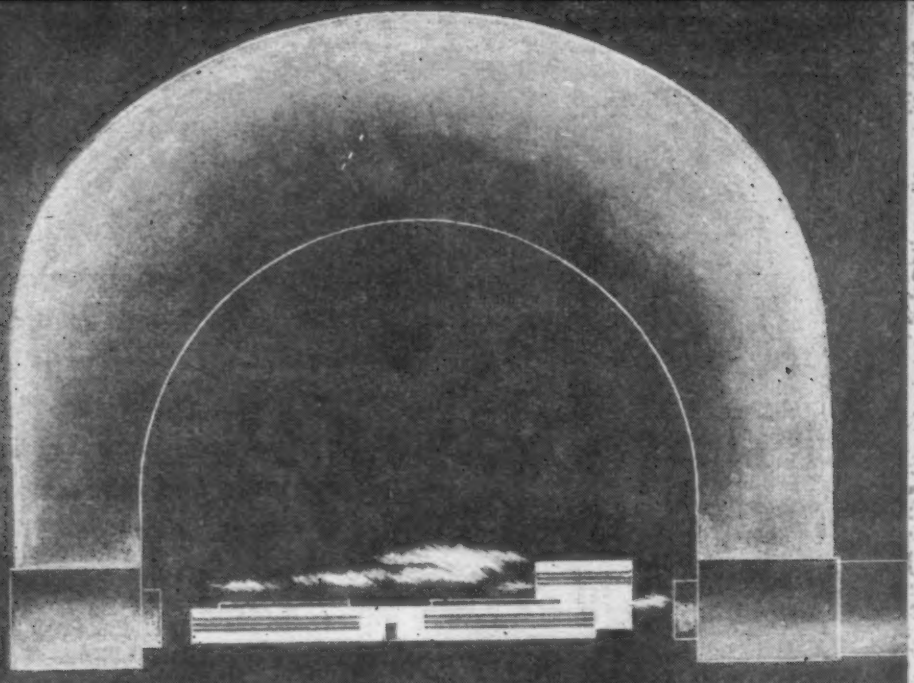


ELEVATED AIR TRANSPORT TERMINAL for St. Louis has been proposed by Oliver L. Parks, who suggests the present Union Station. Features shown in the artist's sketch include A, north-south flight deck, 250-ft. wide, 2600-ft. long; B, east-west flight deck, 250-ft. wide, 3000-ft. long; C, airways station and auto bus depot; D, auto parking; E, truck-rail transfer terminal; F, warehousing; G, fruit and produce terminal-market. Aircraft storage would be located beneath flight decks, with elevator connections. Total cost is estimated at $15,000,000 by Engineer Charles Ellaby.

The attitude of the feeder applicants is of course, understandable. Since their certificates of convenience and necessity will probably be limited to three-year periods by the CAB and since they are experiments they will be expected to operate as economically as possible. If even a very nominal charge of $25.00 per month plus $5.00 per landing or something like that were made this would run into considerable overhead on each route. Most feeders expect to start out with one schedule per day and to increase this to two as traffic warrants. For the average line with six intermediate stops at one schedule per day even this nominal charge would amount to $180 per month ($25.00 flat charge plus $5.00 per landing) or a total of $2160 per year. This doesn't seem like too large a figure to be allowed for in total operating costs of even a feeder airline.

Of course, many of the smaller communities feel that to get air service they will be willing to do a lot for the successful applicant. This was the same attitude assumed by the larger towns in the early days of commercial air transportation when all sorts of concessions were made to the airlines, long-term leases at low rates entered into or even long-term agreements giving free use of airport facilities. These were contributions by the communities concerned to the development of air transportation. But these contributions were made by large communities. They could afford to do things like this. The question now arises: Can the smaller communities afford to do the same thing? Won't the smaller communities have to watch airport expenditures and encourage every source of airport income? Won't they expect in many instances to have certificated airlines using their airports for a commercial purpose at least pay a nominal charge? The answer is certainly in the affirmative to all these questions except the first where it is a decided "no."

It would, therefore, appear that in arriving at the total costs of operating a feeder airline over any period of time airport landing fees and other rentals should be included. Otherwise an unfair picture to the proposed operator, who will undoubtedly be faced with the need of paying such fees eventually, will be presented to the communities involved and to the taxpayers who will subsidize feeder airlines to a certain extent anyhow in the form of airmail pay. ★ ★ ★



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Know Your Airport

Airport managers should cultivate a closer acquaintance with their property, especially the back areas. Removal of eyesores and correction of early damage will result.

By DON LEE
Airport Paving Engineer
Airport Service, Fourth Region
Civil Aeronautics Administration

FROM experience in making scores of airport inspections with or without airport managers, I am convinced the most important thing that can happen to an airport manager is for him to get introduced to his airport, and after becoming acquainted, he should cultivate a closer acquaintance with it by frequent follow-up contacts.

Far too often, the airport manager's acquaintance with his domain is limited to the coffee shop or airport office and hardly ever beyond the limits of the apron. When pilots begin to complain of runway conditions being bad, he will look into that, only to the extent of repairing same, but rarely ever as to the cause of the failure.

Let's take an airport manager on a tour to introduce him to his domain. The first thing he will learn is that it is big and extends far beyond the apron and runways; that there is a back side to the airport, and many times the conditions outside the boundary often restrict the full utility of his province.

Probably for the first time, he will learn the condition of his boundary fence; cattle hunting greener pastures, neighbors hunting short cuts and small boys hunting rabbits have ways of tearing down fences.

While making this perimeter inspection, he may find that the outfalls to the drainage system need attention. He should investigate the outfall drainage ditches to see that they are not silted up or clogged with vegetation and other details that affect their utility. A damage suit might be in the making. The outfall head-walls should be investigated to see that there is no scour or undermining, for if there is, he will lose such structures.

On this outside swing, he will have an opportunity to observe the condition of the approaches.

This is probably the first time he has seen the airport from the "down under". Unless an intensive maintenance program was carried out for the first year or two after the completion of the airport, he will find the slopes to all fills eroded. He may find some of them serious and eating back into the usable area. He may find the cables of the boundary lights exposed or broken by such erosion. This type of damage is cumulative, and unless corrected, will result in an expensive reconstruction project.

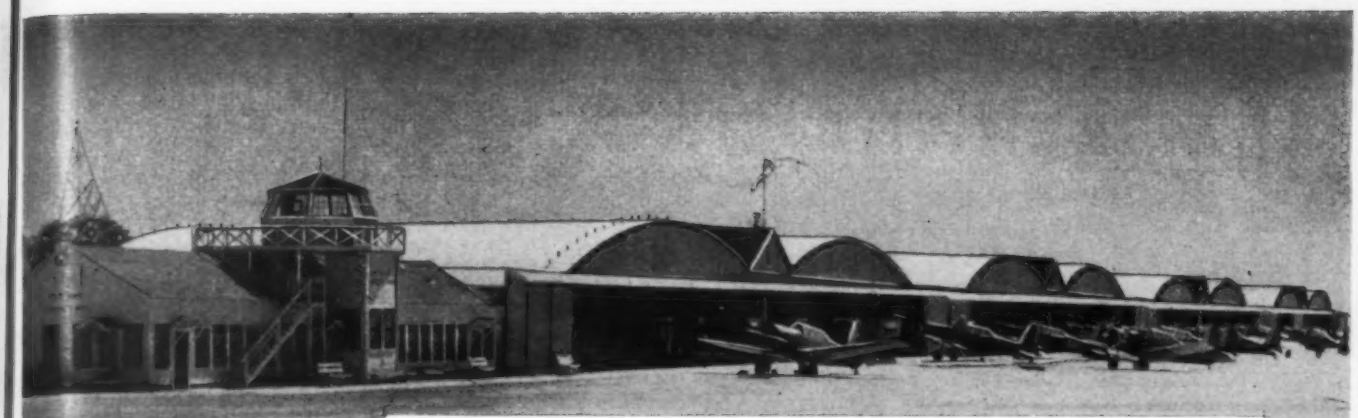
On this introductory trip, it is a safe bet that he will find the wrecked airplane and junk he ordered to be cleaned up from behind the hangar last week has been dumped in some unsightly weeds in the back side of the airport. If the airport manager has any pride in appearances, he will want this nuisance corrected.

By this time the airport manager is becoming interested in his new-found friend and is anxious to get closer to the active parts of the field. It is suggested to him that he walk out the drainage system. It is surprising how many holes or sinks will be found along the underground drainage system, due to improper compaction of the trench backfill or faulty constructed joints or damaged drain pipe. Unless there was excellent maintenance on the field before his regime, it is a cinch he will find clogged catch basins and it will be explained to him that one of the most important maintenance duties is the inspection of all catch basins after each rain, as mower cuttings and other debris float down and clog the catch basins, which puts the drainage system out of balance. He will probably find serious erosion patterns leading to catch basin areas, or some catch basins being by-passed, which are often dangerous hazards.

While he is walking out the drainage system, he will have an opportunity to observe the condition of the turf. He may find the two extremes—bare areas with no turf, which is subject to wind and water erosion, or areas covered by weeds or rank grasses that are hazardous and shade out the growth of turf and obstruct contact and range lights. By now, he should be realizing the most important duty

(Continued on page 56)

Three examples of what the airport manager usually finds on an inspection. Left to right are a drainage culvert silted in so badly water cannot drain away, a runway sink where standing water seeps through to weaken the base, and a damaged marker in need of repair.



(Above) Photo shows STAR Hangars at Hicks Field, Fort Worth, Texas. Major Long—owner.

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(Below) Photo shows STAR Hangar at Darr School of Aviation, Ponca City, Oklahoma.

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AIRPORT MERCHANDISING

By DUDLEY M. STEELE
Manager, Lockheed Air Terminal

IN previous months, various sources for producing revenue, which are used to good effect on this terminal, have been discussed in some detail. We now come to the conclusion of such ideas.

Gift Shop

About five years ago my secretary had an excellent idea for establishing a small gift shop in our lobby. We did not believe the time was then ripe for an exclusive gift shop. Instead we decided to carry a few small items as a part of the stock at our cigar and newsstand. Sales were gratifying. The type of merchandise necessarily was not as high-class as we would have liked. The primary reason why the present gift shop was not established sooner was due to lack of space. We kept the idea in mind, however, believing it was sound. When the merger between Western Union Telegraph and Postal Telegraph Companies occurred, the space formerly occupied by Postal Telegraph in our lobby was released and this time we decided on the establishment of a gift shop. We made a search for an operator who knew the gift shop business. After careful consideration, we entered into a lease with one of the most successful operators in Southern California—Mrs. Ethel Wiesinger—who, in addition to our gift shop here, conducts one in Beverly Hills, Calif.

We insisted that the type of showcases used for display purposes be extremely high-class and to this end had our architect, J. E. Dolena, make the designs. From the date this gift shop opened it has been heavily patronized. At first only one girl was employed; later, it became necessary to add a second. The type of merchandise carried is varied and excellent. Some items retail for as much as $400, and there have been a number of such sales. The total area of the gift shop is but ninety-two square feet. The gross business done in this small spot is very gratifying to Mrs. Wiesinger, and from the standpoint of rental to the terminal, it is more profitable per square foot of space involved than any other part of the lobby.

The best method of handling this gift shop is to establish, after consultation with the lessee, a minimum rental for the space provided. This must be low enough to permit the operator to pay it without undue hardship, and at the same time, be high enough to permit the terminal to receive a fair rental on the space involved. We charge as rental a percentage of the gross business, using the minimum heretofore referred to as the lowest figure and then setting a ceiling on the maximum that we may receive as rental. So far, in every month since the gift shop has been open, it has paid us the maximum rental possible under this arrangement. It is definitely good business.

We know little about the operation of the gift shop itself, so we have asked Mrs. Wiesinger to tell her story, which she has consented to do. The following is Mrs. Wiesinger's own story:

"One of the many characteristics of the management of the Lockheed Air Terminal is their ability to utilize and, consequently, capitalize on every inch of the space on their domain. Due to that foresight a corner in the lobby, a space only ten by twelve feet, has been transformed into a unique and charming jewelbox. The hurried traveler or casual visitor is amazed at the quantity and variety of precious and semi-precious adornment, which the owners of that shop have selected, and which satisfies every taste and pocketbook. We have anticipated every conceivable occasion that calls for a gift. An observer spending a few minutes at the counter will find a world of human nature revealed to him for it affords countless insights into the American heart as it displays itself in the variety of people who stop there and the variety of purchases made.

"There are bracelets from Mexico, earrings created by American craftsmen — Coro, Reja, Ciner, and many others. Bags and perfumes selected from all over the continent find their way back again to the farthest corners of the Union. And then, of course, the boy friend, who forgot the wedding ring—the plane is waiting, the eloping bride is in tears — but fortunately he can purchase a ring in a few minutes, and the situation is saved.

"Celebrity admirers will not be disappointed for on different occasions one will find Bette Davis, in a friendly chat with the salesladies, purchasing Hawaiian perfumes; Ann Southern purchasing a long sophisticated-looking cigarette-holder; Lou Costello with his little antiques, unable to make up his mind what he wants; and many others.

"So obviously there is considerable activity in this one little corner of the Lockheed Air Terminal, and the judgment of the management has been vindicated."

Sale of Frozen Confections

For many weeks after this writer took charge of the terminal he saw vendors, particularly on week-ends, with their little carts selling ice cream and other frozen confections. The public who bought them littered the streets and lobby with the wrappings from these confections. The terminal received no revenue from their sales. Upon checking into the situation carefully, we found that considerable sales were enjoyed, amounting to several thousands of dollars per year. We thereupon made a deal with the Good Humor Company to furnish one of their trucks at a predetermined point on the terminal, and we secured from them an agreement to pay us a fixed percentage of their gross business. In addition, the attendant on the truck must keep the area within fifty feet of his truck completely picked up and clean of all papers or trash. We provided a trash barrel for this purpose. We know the Good Humor Company makes a clean confection. We have never had a complaint. Since giving the exclusive concession to this company, we have averaged about $125 per month revenue from this one source. We believe this method is far better from a revenue, cleanliness, and sanitary standpoint than to have numerous individuals selling products which may or may not be sanitary. Aside from causing dirt and trash to be deposited on the terminal, the former vendors also interfered with and impeded traffic.

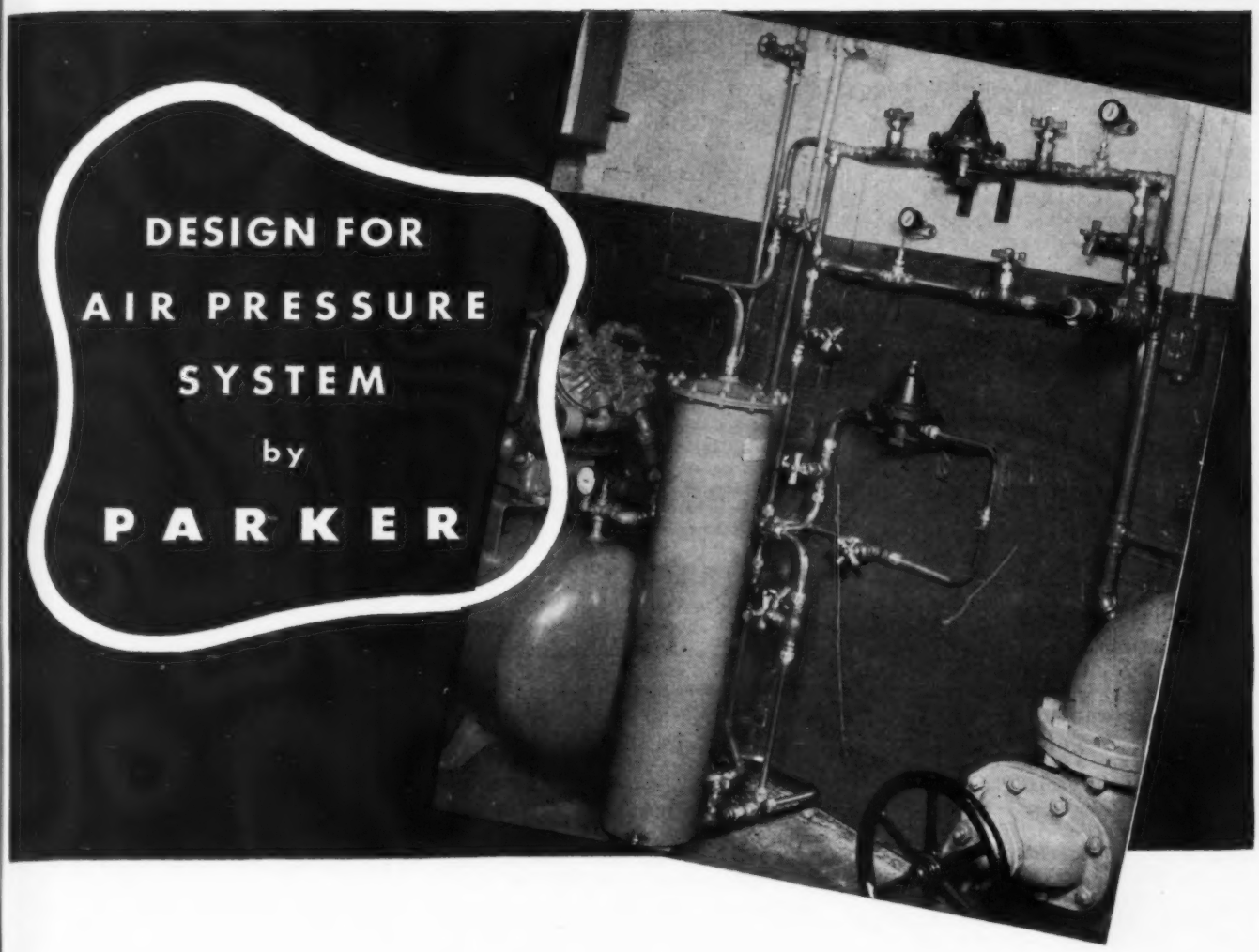
Baggage Storage Lockers

All of the readers of this column must be familiar with the baggage storage lockers used by railroad stations. The application of their use to air terminals is a natural one and fills a long-felt need. We first experimented with one group consisting of twelve lockers. The public's acceptance was immediate. The returns were naturally small. Within a short time we had doubled the number of lockers. The American Locker Company of Los Angeles made a contract with us in which they agreed to furnish the lockers and maintain them; we collect the rentals and split with the American Locker Company on a very favorable basis. The greater the income, the greater is the percentage of split to the airport. Our net receipts and profits from this enterprise roughly is $100 per month. Besides it is a great convenience to the traveling public.

Steam Bath and Massage Department

There are many of you, who, upon reading the above heading, will probably smile. Maybe a little snicker and perhaps even a sneer might be the result, but . . . any legitimate way of making money is not to be sneezed at today, tomorrow, next month, or next year. Before we put this steam bath and massage department in, we had numerous requests from airline travelers, such as "Where can I get a bath? Where can I get a rub? I would like to get a steam." They were passengers who were arriving after fly-

(Continued on page 59)



Let's take a frank look at the things that make the controls work—on this air pressure system or on *your* machines.

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PARKER

KNOW YOUR AIRPORT

(Continued from page 52)

he can perform, as far as the maintenance is concerned, is the development of a good turf. This may require a smoothing, seeding or sodding and fertilizing program, but it is a safe prediction that it is cheap at any cost. During the development of a turf, frequent mowing is essential to keep down the weeds and rank grasses and to encourage the turf grasses to spread.

After the airport manager learns the condition of his allway and shoulder areas, he will now turn to the runway and taxiway system. If he is friendly with the city engineer, he should invite him to go along, as there are many technical features to the surfacing that a trained engineer could point out to him. Normally, a runway is made up of the subgrade, the subbase, the base, the surfacing and the seal coat. All are inter-related and a defect in any one affects the whole. If a weak spot is found in the pavement, it should be repaired before it allows water to enter the base and the weak or unstable section grows and becomes a major repair job. His engineer friend will tell him to keep all pavement joints and cracks sealed to prevent moisture from entering the base or subgrade and to keep the shoulders well drained.

By now, the airport manager has been introduced to his airport. He now realizes that his province entails more than a runway system, an apron, a gas pump, an administration building and a register book. With closer acquaintance and more frequent contacts he will discover other attributes in his realm.

THOS. D. BROAD
ARCHITECT
For Dallas Air Terminal
Love Field
Burt Bldg. DALLAS R-4768

TESTIMONY ON AIRPORTS before the Lea Committee was delivered by numerous aviation figures in recent weeks. Here are three leaders in a discussion of the airport program between sessions of the House Interstate and Foreign Commerce group. Left to right are Assistant Secretary of Commerce William A. M. Burden; Col. Roscoe Turner, president of National Aviation Trades Association, and Charles B. Donaldson, Assistant CAA Administrator for Airports.
—(Del Ankers Photo.)

New Airplane Crash Fire Fighting Manual

With greatly increased military flying during the war, the fighting of airplane crash fires has become a problem of concern to fire departments. To provide information for the assistance of fire fighters, the National Fire Protection Association has published a 96-page manual that covers equipment, airplane crash fires and rescue hazards, rescue features, basic fire hazards, fixed and portable fire protection on the airplane, and [illegible] subjects.

The manual is indexed for convenient reference, divided into chapters, and printed in two colors. Numerous illustrations and diagrams make the text easy to understand, and the completeness of the material results in a book that is an important source of information on every phase of airplane crash fire prevention and fire fighting.

The manual may be obtained from the National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass., at $1.00 a copy.

Elaborate Tests on Downtown Airpark Planned by NATA

A model downtown airpark, with demonstrations of all the latest developments and facilities, will be sponsored beginning in August by the National Aviation Trades Association, according to Col. Roscoe Turner, president.

The city in which the model operation will be located was to be selected after July 15.

According to Turner, manufacturers and distributors of aircraft and airport equipment will display their products to prove the utility of downtown airparks. Hangars, light-guns, wind tees, show cases, radio sets, fuel services, eat and drink facilities, etc. will be shown. At least three types of runway surfacing are to be tried out, as well as seeding for turf.

Assistance in sponsorship will be given by the Aeronautical Chamber of Commerce, Aircraft Distributors and Manufacturers Association, National Aeronautics Association and others. Air taxi service will be boomed every day of the demonstration, as will cargo flying.

According to Turner, the project is being designed to accomplish a "tremendous selling job" for aviation in general and downtown airparks in particular. More details will be announced later.

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AIRPORT PLANNING

(Continued from page 47)

The improvement of drainage is a major objective of the grading design and as mentioned above this may involve the consideration of minimum grades. The grading design should eliminate the carrying of surface drainage across landing strips or runways. Collection or ponding areas should be provided, outside the limits of the landing strips where feasible, and the flow of water should be directed so that all areas will be quickly drained and so that an effective and economical drainage system will result.

Improvement in the supporting capacity of the field areas will naturally result from improvement in drainage; however, further improvement may also be developed by placing the more desirable soils in the upper layers of the field area. It is apparent that gravels or good quality granular materials will be more stable during wet weather than clays or silts. The selective placement of soils encountered in excavation or available from adjacent borrow sources so as to provide highly stable surfaces on landing strips and other usable field areas may often be accomplished with little additional cost. A basis for selection of soils may be found in the pavement design standards of the CAA and in the practices of state highway departments.

A fertile topsoil or the fertilization of field areas should be provided in order that vegetative growth or turf may be quickly established over the field areas. This is essential to the elimination of erosion by wind and water which may result in damage to the airport and endangering of aircraft and airmen. In some desert areas the establishment of turf may not be practicable and in such cases other means of preventing erosion must be developed.

Consideration of all the above features will usually result in a grading design using crowned landing strips and taxiway strips, with depressed areas along the edge of the landing strips for the collection of drainage.

Drainage

The drainage design may be either simple or complex depending upon the site and local conditions. The system will be composed of depressed areas with or without underground conduits, intercepting ditches, and in some cases subdrains. The drainage design is developed around the master plan and in conjunction with the grading design, using the topographic map of the site.

While the design of the more complex drainage systems is highly complicated and will require the services of a competent engineer, it might be worthwhile to mention some of the factors which must be considered and evaluated in the drainage design.

The development of the actual drainage design may be broken down into the following five steps:

1. The selection of the storm intensity upon which the design should be based.
2. The determination of runoff factors or factors of perviousness for the field areas.
3. The determination of runoff for each sub-area or unit of the system based upon the above.
4. The design of inlets, conduits, and ditches to handle the volume of runoff determined in 3 above.
5. The design of erosion protection on steep slopes or in areas handling large volumes of runoff.

Further discussion of drainage design is definitely of a technical nature and out of place in this article. However, the importance of good drainage design is emphasized and an adequate drainage system will add greatly to the utility of the field and eliminate danger and damage from erosion.

(The next article will discuss Turf, Stabilization, Paving, Marking, Lighting.)

AIRPORT MERCHANDISING

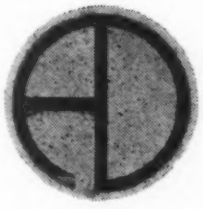
(Continued from page 54).

ing all night, who had early appointments in the day, and who were leaving that same evening on another plane. They did not want to spend the time and trouble to obtain a hotel reservation just for the purpose of doing these things. We listened to their requests for quite some time, and then made the installation. It is not a big money-maker, but the business can be developed to the point where it should return from $100 to $200 per month revenue on large airports. Ours is somewhere between these two figures. This is a concession and we charge the operator a percentage of his gross business, checking his figures once a month and billing him. Make no mistake about it, it is a great convenience to many travelers. If your P-A system is not too busy, announcements can be made concerning this service at regular intervals throughout the day. The announcements undoubtedly will result in extra business in this department.

That's all for now. See you next month. ★ ★ ★

Peacock Succeeds Acker

Mrs. Frances Peacock, well known assistant manager of the Birmingham Airport, has been named manager there succeeding Steadham Acker, who resigned.



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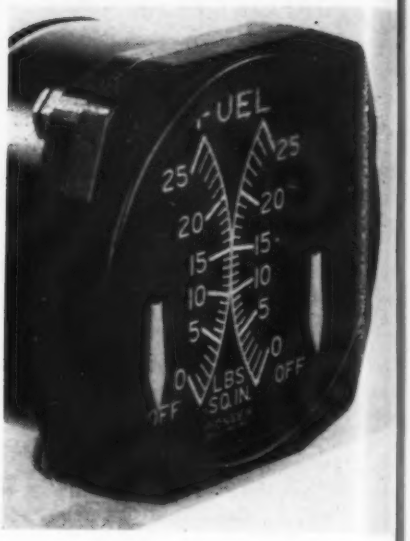

Fuel Pressure Indicator

AIRCRAFT INSTRUMENTS

(Continued from page 39)

the private flier but definitely applicable to commercial flying is Pioneer's attitude gyro, the third of their wartime gyroscopic developments. In design and operation much like that developed by Sperry, it is electrically driven and gives continual indication of the plane's attitude throughout all maneuvers. Its chief difference from the Sperry instrument is that it is smaller, the panel cut-out hole measuring three and one-eighth inches in diameter as compared with four and seven-sixteenths inches.

A three and one-eighth-inch panel cut-out diameter is the standard AN specification for smaller instruments, and Pioneer is trying to meet that specification for all its instruments, however large. In redesigning its instruments during the war, the company has achieved this aim in almost every instance. The most notable example is the gyro flux gate compass. Whereas this originally weighed forty pounds and required a large panel cut-out for installation, the new model developed during the war weighs only fifteen pounds and has the standard AN three and one-eighth-inch diameter. One of the few remaining instruments which has large diameter is the API, and this, too, is being redesigned to the standard size.

As an aid to the quicker solution of navigational problems, Pioneer has redesigned the bubble sextant to incorporate an averaging device. Formerly the navigator had to take eight or ten sights, then average them himself. This usually took a good twenty minutes and gave an answer correct to five to ten miles. With the new model, the navigator shoots only one star for two minutes. The instrument does the averaging automatically during the time and gives an answer correct to two to five miles. Like the API, it will probably have most application in peacetime for transoceanic airlines.

Accurate measurement of fuel flow becomes vitally important on long-range flights. Obviously, the longer a plane is in the air, the more dangerous it becomes to burn too much gasoline. On a ten-hour flight, for example, a pilot could burn 400 gallons more than he had calculated simply by cruising on too rich a mixture, and consequently be forced down far from his destination. This would be particularly undesirable in combat since he would probably be forced to land in enemy territory.

To help avert this, the Army began installing fuel flow meters in all its long-range bombers. And simultaneously Pioneer began redesigning its original meter. The new model, which operates with a magnesyn remote indicating system, is about one-third the size and one-third the weight of its predecessor and twice as accurate.

Even before the war Pan American Airways had used fuel flow meters extensively on their long transoceanic routes. With the development of the new improved model, the meter will probably find increasingly wide application among all the airlines, both foreign and domestic. For the domestic lines the meter can be useful as an economy measure, serving both to save gasoline costs and permit maximum loading.

Other Pioneer developments which will contribute to more accurate cruising control are a substantial increase in the sensitivity of tachometers and manifold pressure gauges, plus the development of the BMEP gauge.

While devoting most of its research to the instrumentation of large combat planes, Pioneer has also found time to develop an instrument which may be valuable to the private flier as a means of indicating engine performance on pusher type planes. When the drive shaft is longer than six or seven feet, the pointer of a tachometer oscillates to such an extent, because of the numerous bends and kinks in the shaft, that it is extremely difficult to read. On a pusher plane the shaft would have to be considerably longer than seven feet, so that a regular tachometer would be fairly useless. In most cases it would be impractical to solve the problem by remote control indication, as is done on large military and commercial planes, since it would be too expensive.

A solution Pioneer offers is a differential manifold pressure gauge, which would indicate the pressure exerted by the engine, exclusive of atmospheric pressure, for use on pusher planes with fixed pitch propellers. Called a power indicator, it would have simplified indication up to twenty degrees of mercury, with different colors to indicate correct pressure for takeoff, climb, cruising, taxiing, warm up, and idling or gliding. Still in the experimental stage, it would of course have to be approved by the CAA before it could be used by the private flier, but it has definite possibilities for postwar use.

Many minor developments have taken place during the war which will be incorporated in postwar instruments for the airlines and private fliers. Some important ones applicable to civilian aviation are still on the secret list. Others, such as an inexpensive stabilized direction indicator for the private flier, are now seen as possible as the result of wartime research. The ones mentioned here, however, may be expected to make the greatest and most immediate contribution to postwar instrumentation on civilian planes. ★ ★ ★

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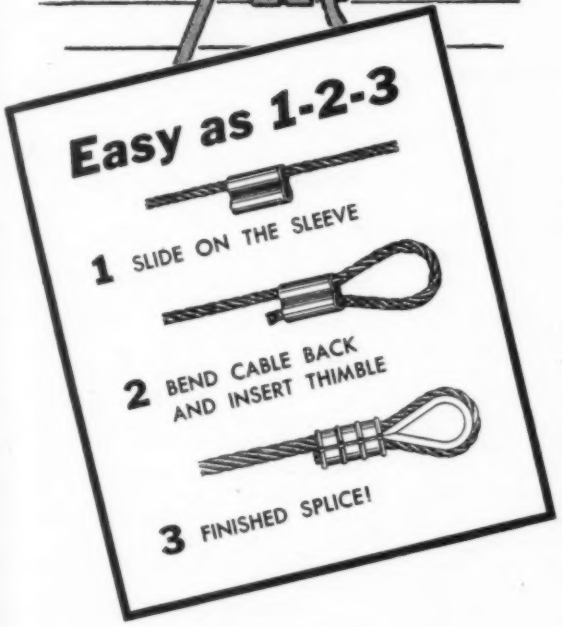

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THE Sky's the Limit

BY BILL GREEN

Aviation regulations have their place and purpose. . . . There is danger in relaxing too many controls. . . . Regulations have saved lives and can save some more if obeyed. . . . CAA is not a policeman but a helpful partner.

Regulations and Their Meaning

A NUMBER of news dispatches of recent weeks have caused us to examine the whole relationship between the Civil Aeronautics Administration, the Civil Aeronautics Board, and the American public.

We have had enough experiences such as every state having different laws with regard to truck and automobiles, speed limit, cargoes, etc., having to stop at state lines; having different dimensions legal in some states from others, and a host of attendant difficulties, to have become firmly sold on the idea of Federal regulation of aviation. We are also naturally sold on the idea of limiting this only to that regulation which is absolutely necessary. We are opposed to having aviation strangled by unnecessary or idiotic rules or regulations.

We are agreeable to the notion that there has to be somebody to regulate and supervise airlines operating in more than one state. All of us have seen examples of questions of jurisdiction and where no one clearly has the jurisdiction, there is none. Whenever we have had any group unfettered and free of all regulation, the general public has usually suffered.

In connection with its supervision of airlines, as we have said before, we do not think the power to regulate should go as far as to permit the CAB to limit either the number of airlines or the number of operators, purely on the basis that the proposed lines or operators might not be able to make a living. We don't think any agency has a constitutional right to decide whether a person or a company should be able to make a living or success.

Among the real old timers in aviation who operated for a number of years with no Federal regulations whatsoever there was, in many cases, a considerable dislike of the CAA and its regulations. We have known old-timers who deliberately flaunted the CAA with violation of any and all of its regulations. The CAA had enough respect for these chaps and enough patience with them that, in most cases, it didn't even bother formally to observe their violation.

There will always be those persons who do not believe in having policemen to protect public rights or of having a large standing army to insure the peace and consequent prosperity of this nation. There are even those who believe we should have no regulations whatsoever in private aviation.

We think every human being has a right to his life, his liberties, and to pursue his happiness. We do not think some other person has a right to mismanage airplanes or take dangerous liberties or to violate all the regulations of common sense and decency in connection with them because it does, in fact, endanger other people's lives and properties and that is precisely the reason the regulations were made.

Relaxed Rules Are Challenge

We wish to reaffirm our belief in the CAA and the CAB with only the very slightest of reservations and it is with considerable misgiving that we note that the CAA is about to relax many of its controls over private flying. Let's look at some of these and see what they mean.

(1) The CAA on July 1 was to permit certain designated instructors to give the license examination for private pilots. Automobile garages are not permitted to give drivers license examinations for the simple reason they would probably permit certain unqualified people to drive automobiles simply because they had the money with which to purchase one. We like instructors and we know most of them are good men. However, we know there is a great difference in the value different individuals place upon certain regulations, certain maneuvers and certain elements of safety connected with flying. That is, of course, partly true of the CAA inspectors; however, they have been selected and groomed over a period of years and they fall pretty well into the groove. Everyone who has gone up against them knows good and well he doesn't get away with much.

There is an element to be considered by all pilots who already have their licenses. That is: Who is this fellow who is always at your wing tip or on your tail as you take off or land? Does he know all the rules and regulations, does he know how to fly, does he know what to expect, does he know enough to follow suit and keep his distance, is he looking, does he even know what aviation is about? Well, we have personally seen enough to know there is a grave danger and we don't wish it to be any more acute than absolutely necessary.

We would suggest, even though it costs more in the way of tax money, the Federal government should continue to ascertain that every person who flies an airplane over our property or around our ears, or next to us when we are in the air, should be thoroughly qualified to do so. After all, we have but one life and we don't want some other idiot to deprive us of it.

(2) We hope that the CAA is never forced to relax its vigilance in the inspection of private aircraft.

Many a time we have had the CAA's regular checks of our aircraft turn up items that should be attended to. We know so many people have such great faith in aircraft they would fly them until they fell apart and, in fact, we have seen it done many times in spite of the CAA. We have heard many a pilot or aircraft owner complain bitterly that the CAA was making him overhaul his engine or give his airplane a check when he didn't have enough money to buy hamburgers. Well, you don't need to buy hamburgers if you are dead and many a guy is dead because he flew an unairworthy plane. Some of our friends passed away that way.

Debunking the Die-Hards

This is such an important factor we would like to give you a few examples of what the CAA does for the unsuspecting owner. A good many years ago, when we bought our first new airplane, it was delivered to us at Tulsa. We went up and took a hop in it and accepted it, and came back to town because of some rather urgent business. Not more than a couple of hours later, a mechanic called us up to say our new airplane had a red tag hanging on it placed there by the

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CRUISING SPEED . . 105 M.P.H.
MAXIMUM SPEED . . 117 M.P.H.
RATE OF CLIMB—Sea Level,
First Minute . . 700 feet
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OF FLIGHT . . 13,000 feet

You won't have to wait for improvements in personal planes—they'll be waiting for you in the post-war Ercoupe

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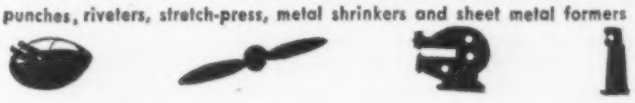

CAA. We were mad as could be and rushed out to see what the trouble was. The CAA inspector had been casually looking over the airplane and had found a crack in the wooden propeller blade, running about half its length. Nobody knows whether that propeller would have flown apart, or if it would have run several hundred hours. However, that chance was not taken and a new propeller was installed and there was no accident. A friend of ours in Houston was taking some time on a Challenger Robin. The airplane was so old and decrepit the CAA would not relicense it, so the owner took it off to an unlicensed field and continued to sell time on it there. That chap was bragging to Jack Huff and me one day about what a wonderful airplane it was and how well it flew and took us out to give us a hop in it. The minute we saw the airplane, we knew we weren't ever going to fly in it. Jack poked it with his finger several places and little rings spread out everywhere from the spot he had touched. The fabric was dead and the paint was worse. We advised our friend never to fly the airplane again and he did not. Only a few days later some other people were killed in it when a big hunk of fabric came off one wing and they spun in. Who would you say was right? The owner, or the CAA?

In looking at this whole picture, it occurs to us that it is not the thought of the CAA or the government to be dictatorial over our handling our own property. The primary thought is that aviation is a very complex science fully understood by very few people. An engine or an airplane is such a complex thing made up of so many variables that no young private pilot or student can be expected to understand all of them thoroughly. Aerodynamics is one of the most complex branches of engineering. Piloting is another very complex science. Weather is a third extremely complicated variable. The performance of any particular airplane is not even completely understood by the people who build them, as witness the many failures known to most of us. Thus it seems proper that some department of the government be set up for the purpose of studying these things, co-ordinating the various features, advising the general public and supervising the whole situation.

If we would consider the CAA, and if they, in general, would consider they are primarily instructors and it is their obligation and responsibility to see that each airplane owner is given some kind of instructions and information in detail with regard to the mechanics of flying, the aircraft's performance and its dangers, then we believe there would be considerably less animosity than in many cases where people consider them as policemen with a big club.

For those who state that aviation does not need any more regulations than motor vehicles on the ground and despite the fact that all kinds of people drive automobiles and it is considered perfectly safe, we would like to point out that every year in the United States there have been more people killed in automobile and other motor vehicle accidents than have been killed in the war, on the average. Do you think that speaks much of a piece in favor of fairly poor or no regulations? Thousands of innocent people are killed in this country every year by unregulated drivers, many of whom are unqualified or have equipment not safe in any degree. Poor brakes, poor steering apparatus, poor horn, poor headlights, and poor drivers all contribute.

Of course, we have killed a lot of people in aviation and most of them killed themselves almost deliberately. They flew in overloaded aircraft or with insufficient gasoline, or with insufficient power to clear obstacles, or in weather they were warned or should have been warned against, and they have flown into each other when not looking. Many of them killed themselves in deliberate violation of the rules as anyone can see who reads the accident reports. I personally can't see how it is bad for anybody to have his life saved by merely observing a reasonable precaution or rule that he ought to be able to dope out for himself.

Roddy New President of Aviation Writers

Maurice Roddy

Maurice Roddy, aviation editor of the Chicago *Times*, was elected president of the Aviation Writers Association at a conference in Chicago last month. Other officers elected are James Strebig, aviation editor of the Associated Press, first vice president; Philip Andrews, editor and publisher of *Air News*, second vice president; Devon Francis of *Popular Science*, executive secretary, and Leslie V. Spencer of McCann-Erickson, Inc., treasurer. Roddy succeeds George E. Haddaway, editor and publisher of SOUTHERN FLIGHT, who was named chairman of the board of governors. A resolution adopted by AWA urged adequate U. S. air defense through a strong air force, aircraft manufacturing, air transport and air research.

Let's Not Be Nuisances

(3) The CAA has the authority to designate appropriate airports or landing strips and we think that it should go a little farther in the exercise of its authority and not permit the construction of airports or landing strips which depreciate other people's property without their permission or which affects the safety and comfort of individuals nearby.

Recently within the area bounded by the city limits of Tulsa some enterprising people placed a landing strip so that on most take-offs or landings, the aircraft had to pass very low over houses in a fairly congested area. Many of the citizens are protesting loudly and their protests should be listened to. After all, pilots and students have a habit of getting up early in the morning and going out to fly. They even fly into the wee hours of the morning and it is a damn nuisance to have somebody flying low right over your house at any time. There are enough areas where the people affected are very few in numbers and airports should be installed only on those sites. After all, pilots and aircraft owners should appreciate other people's rights the same as they look out for their own. No person has the right to disturb any other person simply because he owns an airplane. Surface vehicle noises are pretty well regulated and about the only way you can regulate airplane noise is to keep it at a distance. We think it is different if someone moves next to an airport and then starts complaining, because the airport has prior rights. So if an airport is established next to other citizens who don't want it there, we believe they have prior

"Oops! Pardon me lady, but either the airport or the house is in the wrong place."

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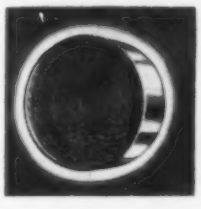

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rights. To those people who say this will throttle or stifle aviation, I say "bunk", and let's see some proof. We are much more likely to throttle aviation by generally disgusting most of the American people. After all, don't forget that most Americans do not fly and have never flown. Many of them are never going to fly, either, and they don't see much sense in doing it.

(4) We think the CAA and CAB should never relax their inspection and regulation of the actual operation of airlines and feeder airlines. After all, the air services contract to deliver lives and property safely to their destination in a minimum of time and at a premium. We know that no airline ever made a profit on a crack-up. They lose expensive and necessary equipment and they get themselves into legal entanglements, some of which are never finished. Many of these can be avoided by observance of regulations and by the addition of other regulations as more knowledge and analysis of the pertinent conditions becomes available. It is interesting to note in this connection that many airlines have adopted their own rigid rules and regulations which they follow explicitly and some of them have been very successful in reducing accidents to a minimum. Why should not these same rules and regulations, when they become known, be placed over all airlines, thus improving the over-all accident picture?

However, as we have said before, we do not think the CAA and CAB have any right or constitutional authority to limit the ability of any individual or company to set up an airline route so long as he lives within existing regulations affecting all other airlines. We do not believe the regulations promulgated by the CAA or CAB should specify that every airline has to use certain specific equipment; all they should specify is that the airline would have to use regularly inspected, airworthy equipment and have proper instruments and equipment both on the ground and in the air, with qualified personnel.

We think the general public is entitled to all the benefits aviation can bring and we think nothing should be done to restrict the development of aviation. On the other hand, we have seen examples where the wildest type of exploitation of petroleum, of gold, of farm land, and of timber land, has resulted in inexcusable waste and losses which can never be recovered. We don't think waste and losses and inconveniences are necessarily a part of the development of aviation, especially from this day on. Especially we do not wish to see aviation handed over to any of the vested interests. We believe airline service will always be better if there are some competing airlines. We believe in competition as an American principle.

The CAA has a long record of pretty well satisfied customers and a constantly improving safety record. They have gone off the deep end only a few times and have in general shown the greatest willingness to co-operate and work with the flying public. We think that if you have any cause for complaint against the CAA, it is more than likely your fault. At least, there is something you can do to work with them.

We have never felt that the CAA was a policeman over us. We have rather felt it was a partner, doing some of the dirty work for us, and giving us some of the assistance we needed. We are going to need the CAA in ever-increasing amount as more and more people get airplanes and flit about the country. We are afraid that if it is not pretty well regulated, thousands of innocent people who don't know what they are doing are going to kill themselves. This will not help aviation and it can be avoided.

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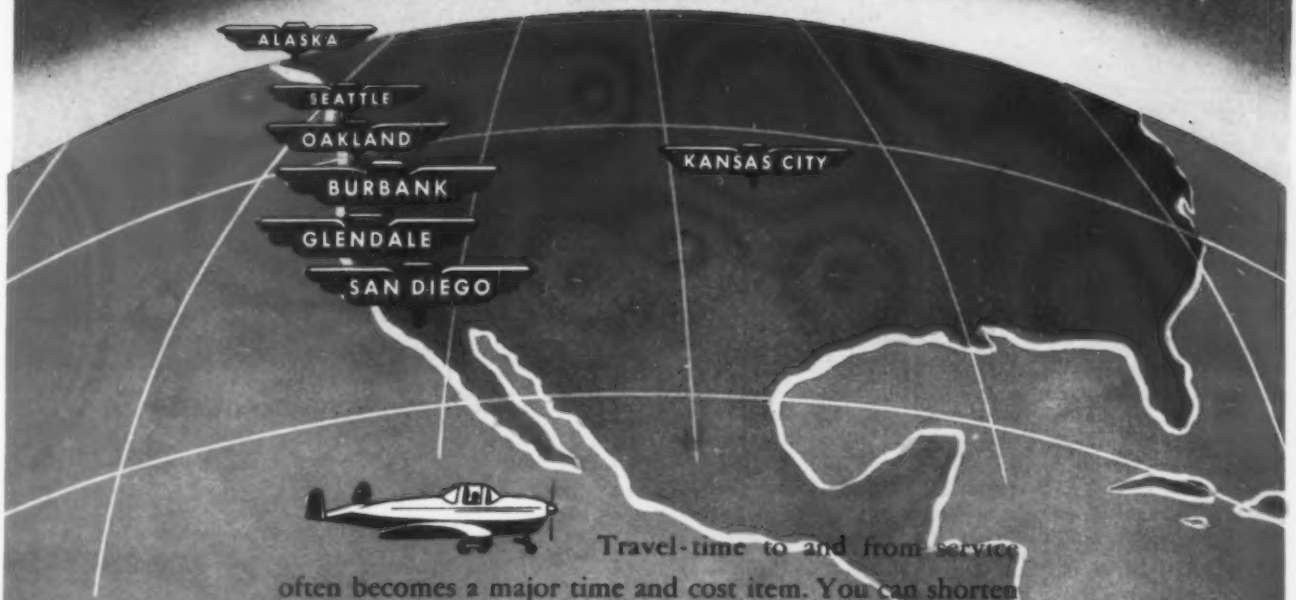

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AIR POWER
In Action

By TOM ASHLEY

ONE of the Allied handicaps in the air war against Japan has been the lack of accurate and up-to-date knowledge of Japanese aviation strength in the air and on the ground. At the time of Pearl Harbor this intelligence was pitifully lacking. But with the first blows we came to learn of "Zero" fighters which could out-climb and out-maneuver the best we had to put against them. Gradually the facts began to take form, but only at a cost in lives and equipment, and almost a year later—in September, 1942—Americans were learning enough about Jap aviation to originate a mountaineer's code for naming the many Jap planes encountered (Rufe, Zeke, etc.).

As of last month, sufficient intelligence had been acquired for the Office of War Information to issue a report on the Japanese Air Forces. The report cites the War Department, Navy Department and "other official sources" as authority for its material. The following, then, is represented as the latest publishable official information:

4,000 COMBAT PLANES: Japanese planes now assigned to combat total approximately 4,000. Japanese aviation personnel totals approximately 600,000, with the Japanese Army Air Force having 400,000 and the Japanese Navy Air Force having about 200,000. (U. S. Army Air Forces plane strength in the Pacific is not known, but U. S. Navy has a total of 37,000 combat planes, and USAAF has about 1,000,000 personnel engaged in the war against Japan while USNAF has a total strength of about 300,000.)

LOW PRODUCTION: Current (as of June 11, 1945) Japanese aircraft production is estimated at between 1,250 and 1,500 planes per month.

Current Japanese plane losses in the air and on the ground estimated to exceed 1,000 monthly.

The JAF appears to have lost the capability for large-scale, sustained offensive action, or even effectively-sustained defensive action. Their ability to improve unit strength out of increased aircraft production seems limited by (1) continuing heavy losses of aircraft, pilots, crews and command personnel, (2) probable shortage of adequate, trained replacements, (3) disruption or elimination of training bases in Formosa, Philippines and other southern areas, and (4) comparatively inferior maintenance and repair.

Although the Allies refer to the Jap Army Air Force and Navy Air Force collectively as the Japanese Air Forces, there is no independent Japanese air service. Both are controlled through Imperial Headquarters by Emperor Hirohito. The ranking Jap air officer is the "inspector general of aviation," who is directly responsible to the emperor for air training but subordinate in other respects to the enemy's "big three"—chief of general staff, minister of war and inspector general of military training.

AIR ORGANIZATION: In the Japanese Army Air Force there are five known Japanese air "armies." While no accurate numerical parallel can be made between U. S. and Japanese air organization, the Jap air "section" of three planes is roughly equivalent to a U. S. "flight," the enemy's "air company" of three sections is roughly equivalent to our "squadron," his "air regiment" of three or more companies functions somewhat as our "group," the the Jap "air brigade" of three or more regiments is roughly equivalent to our "wing" or "division," and his "air division" of two or more brigades is a rough approximation of our numbered air force. Two or more air divisions comprise a Japanese "air army", to which our nearest equivalent would be a theatre or Allied air force consisting of two or more numbered air forces.

PILOTS ANALYZED: The average Japanese pilot is

SHAPE OF THINGS TO COME is graphically emphasized by current displays in Europe of captured German weapons. Here's a V-2 rocket bomb as photographed in an Antwerp square by a SOUTHERN FLIGHT reader, First Lieut. J. L. (Toad) Fitch, who sent it as a reminder of what the next war will be fought with. It is the first photo we have seen illustrating the size of the V-2. Similar displays in U. S. would go far in promoting support for adequate preparedness against future wars.

LOSSES IN THE AIR WAR
May 26-June 25
(Does Not Include Probables or Damaged Totals)

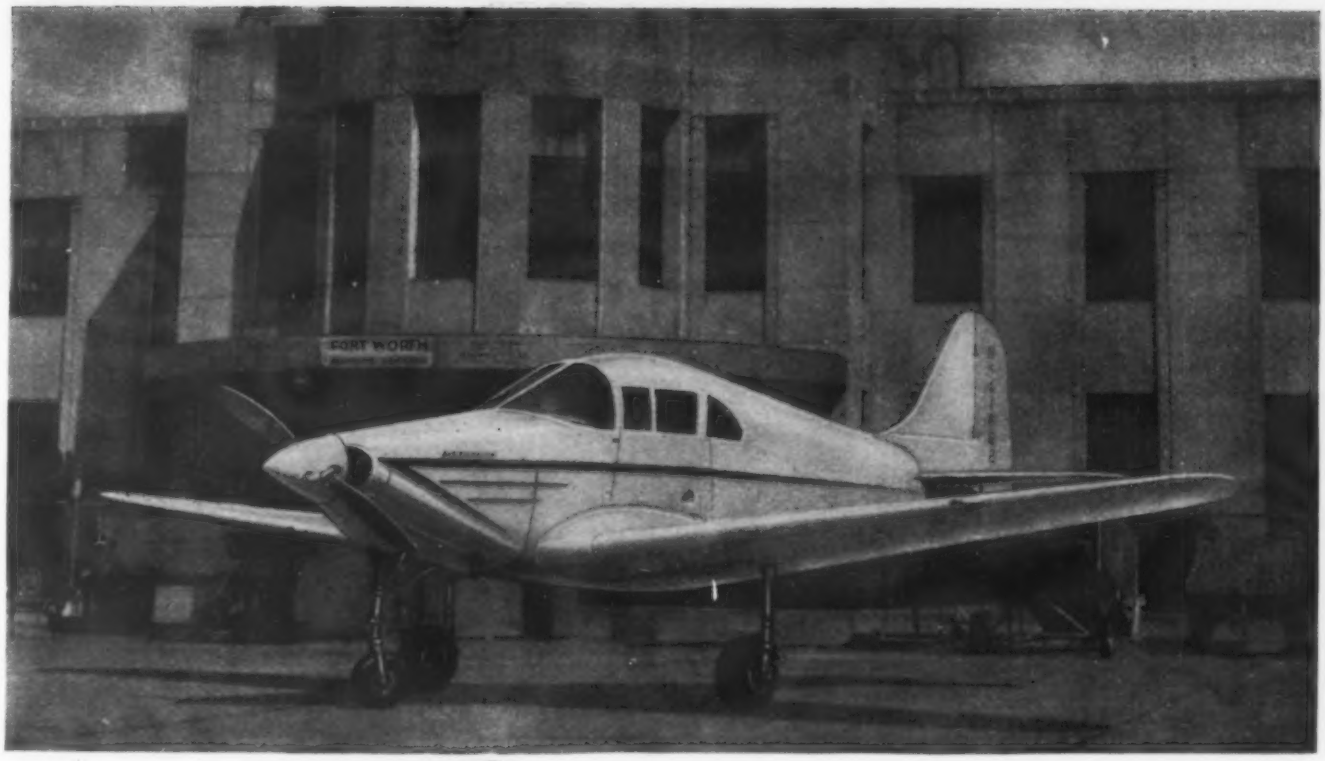
	Pacific Enemy	Pacific Allied	S. W. Pacific Enemy	S. W. Pacific Allied	China Enemy	China Allied	20th Air Force* Allied
May 26	5	....	....	....	....	1	19
May 27	121	....	....	....	....	3	....
May 28	....	....	....	....	7	4	....
May 29	34	3	....	2	....	....	2
May 30	1	....	....	1	....	....	....
May 31	6	....	....	....	....	....	....
June 1	1	....	....	....	....	....	10
June 2	13	....	....	1	2	1	....
June 3	50	....	....	4	....	1	....
June 4	1	....	1	1	....	....	....
June 5	5	....	1	....	....	....	8
June 6	47	....	....	....	....	2	....
June 7	28	....	....	....	....	1	2
June 8	42	4	....	....	....	....	....
June 9	6	....	2	1	....	....	....
June 10	29	....	....	....	....	....	1
June 11	45	....	....	....	....	....	....
June 12	2	....	....	....	....	1	....
June 13	....	....	....	....	2	1	....
June 14	2	1	....	....	....	....	....
June 15	2	....	....	....	....	....	1
June 16	3	....	1	....	....	1	....
June 17	3	....	....	....	....	1	....
June 18	....	....	....	....	....	....	1
June 19	3	....	....	....	....	1	....
June 20	....	....	....	....	....	1	2
June 21	....	....	....	....	....	4	....
June 22	59	....	....	2	....	2	4
June 23	....	....	1	1	....	....	....
June 24	3	....	....	....	....	1	....
June 25	1	....	1	....	7	2	....
Totals	512	8	7	13	18	28	50
Totals since Jan. 1	5858	264	1268	101	660	200	116

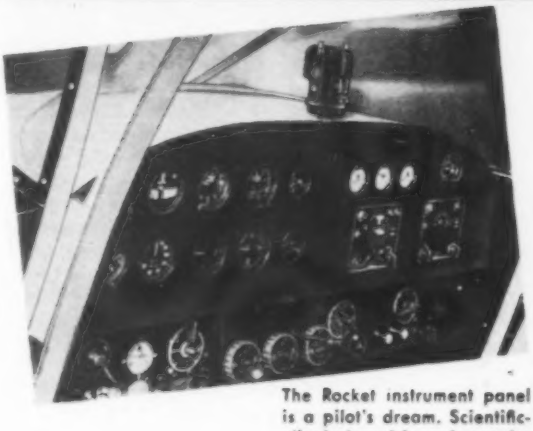
*20th AIR FORCE: U. S. losses only.

SOUTHEAST ASIA: 2 Allied planes lost. Totals since Jan. 1, 143 enemy, 137 Allied.

(NOTE: These figures are compiled by SOUTHERN FLIGHT from daily headquarters communiques issued by the respective commands. They are, therefore, subject to periodic adjustment. Dates for Southwest Pacific are those on which figures are released; others when action occurred.)

LOSSES IN THE AIR WAR FOR 1944 — EUROPE: 9,907 enemy, 8,467 Allied; ITALY: 4,048 enemy, 3,631 Allied; SOUTHWEST PACIFIC: 3,612 enemy, 420 Allied; CHINA: 1,037 enemy, 262 Allied; SOUTHEAST ASIA: 406 enemy, 253 Allied; PACIFIC: 5,279 enemy, 445 Allied; RUSSIA: 13,989 enemy.





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The WORLD'S WINGS

By LUCIEN ZACHAROFF

Planes Revive European Communications

AVIATION'S all-important role during Europe's liberation is continuing on a comparable scale over the Continent grappling with its construction tasks. Millions left destitute, homeless, foodless are learning what an agency of mercy and relief the transport aircraft can be. Thousands of U. S. and British planes have been mobilized to drop food to the starving, to rush the sick and wounded to medical centers, to carry home the erstwhile prisoners of war, to bring news to isolated communities.

Despite the transfer of much air strength to the Pacific, the peacetime application of the airplane in Europe appears to be expanding. Even before the war's end, this trend was pronounced. In a single week Allied aircraft delivered 10,528 tons of gasoline to the troops in the field, returning with 47,178 liberated prisoners and 16,900 casualties.

Nazis in flight were wrecking or mining the highways and railways not demolished by our bombardment. This forced our ground forces to depend on air communication lines for large quantities of fuel and other supplies. At the same time long-suffering populations received relief from the skies. General of the Army Eisenhower's promise of food to prostrated Holland was fulfilled by RAF Lancasters dropping essential goods.

As early as last January the fighting Yugoslavs had received over 2,000,000 pounds of supplies, thanks to Allied mastery of the sky. Indeed, it was in the Balkans that the technique of large-scale air delivery of supplies and evacuation of the wounded was first tried in Europe. During the Balkan campaign a total of 6,000 Yugoslav casualties was evacuated.

When the Germans blew up Greek bridges and stole transport equipment during their retreat, millions of natives welcomed the Wellington bombers which, among other things, dropped 50,000,000 leaflets. For 6,000,000 Greeks had been cut off from the news of the world.

The magnitude and immediate potentialities of European air transport are best appreciated when we recall that transportation is among the most acute reconstruction problems. Nazi confiscations and destructiveness, patriotic sabotage, Allied bombing during the occupation nightmare have taken a heavy toll of rolling stock and locomotives, autos and trucks, bridges, marshalling yards, shipping, inland waterways and locks.

Jet-Minded France

French planners are preparing for substantial output of jet- and rocket-propelled aircraft. They hark back to 1939 when these propulsion means were already in production and under study by the French Navy.

Recently a noted engineer calmly announced at the Paris Aviation Conference that soon stratospheric ships with cruising speeds in excess of 1,000 mph. will span the Paris-New York distance in two hours. He promised transatlantic carriage of passengers and freight in a bevy of gliders attached to a jet or rocket plane or by huge aircraft. He stressed the prospect of safe export of perishables.

Britain's Newest Combat Planes

At least four new British aircraft types are to join the Pacific fight. Rushed into production are three fighters and a bomber. The jet-propelled Vampire—500 mph. in level flight—is a single-seat fighter, designed and constructed by the manufacturers of the Mosquito. It represents the greatest British advance in jet craft since the adoption by the Allies of Group Captain Whittle's patent.

Another newcomer is the twin-engined Hornet, a scaled-down version of the Mosquito. The latter represented two mighty Rolls Royce Merlins with fuselage and wings built around those engines; the Hornet has even less structure to hold the power plants together. With its maximum speed of more than 470 mph., it is claimed officially to be the fastest propellered plane.

The parent Spitfire never hit the top speed of 460 mph. boasted by the offspring Spiteful, a single-seat fighter with streamlined fuselage and wings and the latest-type Rolls Royce Griffon engines.

Our press has mentioned briefly the four-engined Abraham Lincoln bomber. Larger than the Lancaster's, its bomb load is also heavier, including the modern 11-ton "volcano" bomb. Speed and range also exceed those of its predecessor. ★ ★ ★

twenty-six years old, stands five feet two inches in height, weighs 122 pounds and has had the equivalent of ten years of schooling. Jap pilot ability, of high order in 1941-42, has not kept pace with expanding responsibilities of air defense and with increasing Allied air skill and strength. The "cream of the crop" in the JAF is gone, according to U. S. airmen, who report the contemporary Jap is not in a class with his immediate post-Pearl Harbor brother, who was generally conceded to be a good flier. Nipponese pilots rely greatly on maneuverability, but their acrobatics have diminished. The variety of the types of attacks employed by Jap fighters has increased. But they are not consistent in the degree in which their attacks are pressed home.

SUICIDE CORPS: Recent evidence indicates a full-scale suicide attack (Kamikaze) air organization has been formed, with special training. Most Japs seek honor in dying for the emperor if necessary, but these corpsmen are doomed from the time they enlist or are recruited in the special units, of which over thirty-five are known to exist at present. Each unit has four or five suicide pilots. Backing them up is a pool of several thousand trainees, aged nineteen to twenty-five. The one-way flights to hell don't require much training, but the die-fly boys receive two months of it. They wear a white scarf headdress, are strapped into their planes and leave safety devices such as parachutes behind. The U. S. Navy believes they receive funeral services before departing on their missions — one was shot down by anti-aircraft and found to be dressed in a kimono called "Black Dragon Gown."

IMPROVED EQUIPMENT: Improvements are steadily being found in Japanese planes, and further innovations are expected. Better streamlining, more powerful engines and more armor protection for crew are outstanding lines of improvement. Heavier guns are being used on some fighters, a twin engine Nick recently being found to have a 37-mm gun instead of the familiar 20-mm and 7.7-mm pieces.

While the Japs are first and foremost copyists, they do a pretty good job of it. An automatic pilot was found to be so similar to a U. S. type that some of the parts were interchangeable; Jap navigation equipment is simple but good; fuels are good although some are too high in aromatics; Jap radio transmitters and receivers are of excellent workmanship and material, sturdily and compactly built and approaching Allied standards electrically and mechanically. The Japs are reported at last to have devised fuel tanks with self-sealing qualities which appear to be good. This is a new type made up of six rubber layers reinforced by an inner silken mesh and an outer galvanized iron mesh.

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PERFORMANCE POINTS TO Pesco FIRST

66,000 Planes Delivered Since Pearl Harbor by Factories in Midwest; Kansas, Texas Lead Area

Over 66,000 aircraft of more than three dozen different types have been produced in five Midwestern states from Pearl Harbor to July 1, 1945, according to Brig. Gen. Ray G. Harris, commanding general of the Midwestern district, Air Technical Service Command.

Production by states was divided as follows: Nebraska, 1,940; Missouri, 4,082; Oklahoma, 7,516; Texas, 25,510; and Kansas, 31,071.

Broken down into types, Midwest production from January 1, 1942, to July 1, 1945, excluding A-26, B-32 and P-51 figures, which are restricted, was as follows: PT-13-17-27, 7,696; PT-19 (PT-23), 350; SNC-1, 136; AT-6, 12,084; C-45 (AT-7, AT-11), 5,053; AT-9, 791; AT-10, 2,371; AT-15, 2; AT-17 (T-50, C-78), 5,353; AT-22, 5; C-43, 412; C-46, 14; C-47, 5,084; C-55, 1; C-76, 5; B-24 (C-87), 4,959; B-25, 6,436; B-26, (AT-23), 1,585; B-29, 1,805; A-24, 615; A-25, 900; gliders (TG-4A, CG-3A, CG-4A), 2,744.

Types currently in production in the five Midwestern states are: North American AT-6, at Dallas; Beech C-45, at Wichita, Kansas; Douglas C-47, at Oklahoma City; North American B-25, at Kansas City; Boeing B-29, at Wichita and Omaha; Consolidated Vultee B-32, at Fort Worth; Douglas A-26, at Tulsa; North American P-51, at Dallas; and the Waco CG-4A.

Ranging from the smallest primary trainer to the huge B-29, the models produced by midwest facilities include eight different cargo planes, three attack planes, a fighter, two medium bombers, a heavy bomber, and two very heavy bombers, as well as two types of gliders, four special purpose aircraft, and fourteen different trainers.

In paying tribute to this production record, General Harris said: "Midwestern production of combat, cargo, and training aircraft played a tremendous part in bringing to a successful conclusion the war with Germany. When Japan is finally conquered the aircraft workers of these five great states will have good reason to be proud. They will have then successfully accomplished one of the production miracles of this war."

Convair Transferring Lightplane, Research to Nashville Plant

Transfer of commercial Voyager 125 production from Wayne, Mich., and of Stout Research Division from Dearborn, Mich., to Nashville, Tenn., was announced during the month by Consolidated Vultee Aircraft Corp. The Nashville plant had been in production of the Lockheed P-38, but this project was cancelled in May. Stinson Division of the corporation remains at Wayne, Mich., where a line of five postwar commercial airplanes is being prepared for production.

June Output to Show Small Decline

June aircraft production was expected to show a small decline from that of May, when 6,354 airplanes were produced. April's total was 6,412.

Even with recently announced cutbacks, Army Air Forces and Navy schedules call for a rate of production in the last quarter of the year only 29 per cent lower than that in the first quarter, WPB Chairman Krug pointed out last month.

May deliveries were 2,168 bombers, 3,019 fighters and naval reconnaissance, 617 transports, 184 trainers and 366 special purpose craft. Production by airframe rate, excluding spares, totalled 71,600,000 pounds, a three per cent reduction from April.

Curtiss Closing St. Louis, Louisville Facilities

Curtiss Wright Corporation will close its airplane division plant at St. Louis at the end of July and its plant at Louisville was to close after June deliveries. The two plants of the corporation in Buffalo will continue to manufacture the SB2C Helldiver bomber with production tapering to level off at about two-thirds of present scheduled production, and the manufacture of the commercial version of the Commando (CW-20), originally scheduled for St. Louis, is to be shifted to Buffalo. The Columbus plant is to continue to produce the Seahawk (SC) scout planes.

The St. Louis plant has turned out four Curtiss airplane types—Commando, A-25 Helldiver dive bomber, AT-9 Fledgling (transition trainer) and SNC Falcon planes in addition to several experimental types, including the XP-55 Ascender and the C-76 Caravan. Prior to last October, the plant had manufactured more than $500,000,000 worth of military planes during the war. Curtiss Wright has produced aircraft in St. Louis since 1929, before are war turning out private and commercial planes in a small plant which was torn down after the present large facility was completed in 1941.

Laister-Kauffmann Takes Over Louisville Plant

Laister-Kauffmann Aircraft Corp., of St. Louis, in August is to take over the Curtiss Wright Louisville plant for final assembly and production of the Trojan Horse, largest U. S. built glider. Laister-Kauffmann also has completed final steps in the acquisition of the Bowlus Sailplanes, Inc., Los Angeles.

Oklahoma City Plant Delivers 10,000th DC-3

Douglas Aircraft Company's Oklahoma City plant has produced the 10,000th unit of the DC-3 type transport. At one time under production at three of the company's six major plants, the DC-3 is now built only at Oklahoma City, and it was this plant's 4,766th production unit. The Oklahoma City plant now has production under way on the C-117, another adaptation of the DC-3, a light transport to be used solely for the movement of personnel.

Over 2,000 B-29's Delivered by Boeing

On the June 15 anniversary of the first combat B-29 mission against the Japanese homeland Boeing Aircraft Company had produced 2,075 Superforts at its Wichita, Kansas, and Seattle-Renton plants, plus the equivalent of 149 additional B-29's in spare parts. The production figure does not include the output at the Bell plant, Georgia, or the Martin factory in Omaha. More than four-fifths of the B-29's have been built during the past twelve months, more than half of them being built at the Wichita plant which was the first to go into volume production on the B-29.

Two More Lockheed Plants Are Closed

Two additional Lockheed Aircraft Corporation plants located in California's San Joaquin Valley were to close about July 1 because of the cutback in B-17 production. Two plants, one in Fresno and the other in Bakersfield, will remain in operation with reduced personnel. Both of the remaining plants will go back to a forty-four-hour week instead of the forty-eight-hour week.

Rubber Press Pad Speeds Sheet Magnesium

Production of magnesium sheet metal parts for airplanes will be speeded up as the result of the development of a new heat-resistant synthetic rubber forming pad announced by the United States Rubber Company. The pad is a solid chunk of synthetic rubber weighing 2,800 pounds. It is used as the female die in hydraulic presses to form heated magnesium under 5,000 tons of pressure.

Morgan Confident of Sperry's Outlook

Sperry Corporation's rate of production may be expected to decrease as the war progresses, although prospects are that demands for the company's equipment will continue, according to Thomas A. Morgan, president, in his annual report. The company's net income increased from $7,598,343 in 1943 to $7,725,138 in 1944, he announced. Morgan said that Sperry's war experience had carried its engineering and development into wider applications of old products and to new fields. New types of aircraft and other instruments have been developed and will largely displace or supplement some older models, and that the application of electronics, radar, hydraulics and electro-mechanical mechanisms to industrial and commercial uses are to be increased as a result of war experience.

Aviation Corp. Buys Control in Crosley Corp.

The Aviation Corporation has purchased controlling interest in the Crosley Corporation, according to Victor Emanuel, chairman. The acquisition will give Avco a place of major importance in the postwar production and distribution of household appliances. The purchase of Crosley by Avco does not include the Crosley automobile division, representing less than 3 per cent of the company's total assets. A new company is to be formed by Crosley to manufacture the Crosley car and all stockholders of the Crosley Corporation will be given an opportunity to acquire a pro-rata interest in the new company.

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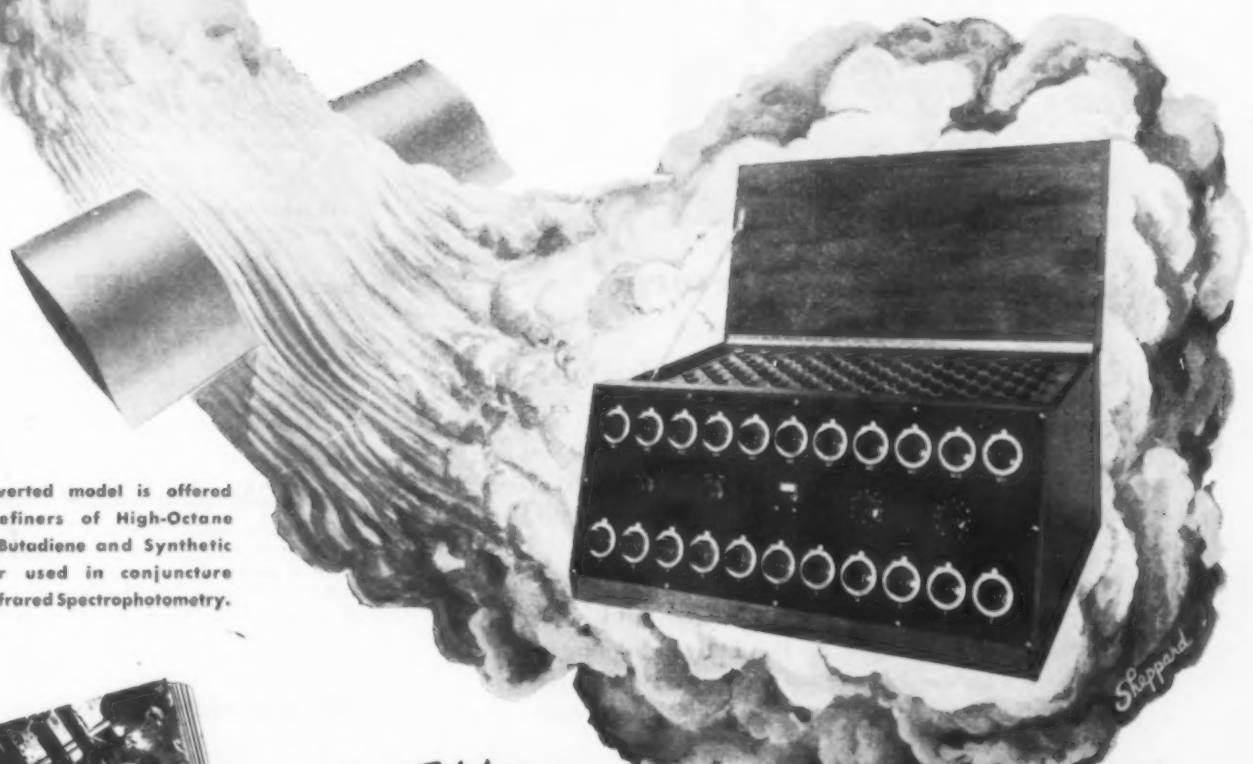

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Jet Engines, Radar Tests for New GE Laboratory

A new building for the General Electric Company's research laboratory, affording 50 per cent more space than present facilities provide, will be erected near Schenectady, N. Y., at a cost of $8,000,000, Charles E. Wilson, president, has announced. Construction will begin as soon as WPB approval can be obtained. The high elevation of the site above the river will afford many advantages for experiments in radar and high frequency jet engines. The rocky cliff foundation will be useful in conducting experiments with X-rays which are now being produced at 100 million volts in the present laboratory, and further increases are expected.

Lear Expansion Includes Marketing of Shares

Lear, Incorporated, has postwar expansion plans which include an extension of its present activities in the electro-mechanical actuating mechanism field and aircraft radio, in addition to its entry into the home radio and wire recording fields. The expansion will be financed partly by funds acquired through an issue of stock which has been offered by a banking group headed by Kobbe, Gearhart & Company, Inc., and 450,000 common shares have been offered. The money obtained through the sale of the stock will be used to augment working capital, finance accounts receivable arising from war business, convert and expand to peacetime operations, purchase certain equipment it now holds under lease from the government and for other corporate purposes.

Jacobs Owners Adopt New Company Name

The name of the Continental Engineering and Management Corporation — new owners of the Jacobs Aircraft Engine Company of Pottstown, Pa.—has been changed to Republic Industries, Inc., the New York Corporation has announced.

Bendix Products Delivers 13,000,000 Units for War

Since Pearl Harbor, the Bendix Products division of Bendix Aviation Corporation and its sub-contractors have produced more than 13,000,000 units of precision automotive, aviation and ordnance equipment. This accomplishment involved an average production on each working day of more than 10,000 units of many types, ranging from carburetors and brakes to landing gear struts, universal joints, aircraft wheels and highly complex electrically power-driven gun turrets. Current and future assignments will include high volume production of new fuel equipment for bombers and fighters.

Luscombe Sales for 1944 Show Increase

The Luscombe Airplane Corporation of Trenton and Dallas earned $161,385 net after taxes during the fiscal year ended December 31, 1944, according to Leopold H. P. Klotz, president. The company closed the year with an earned surplus of $37,570. Sales in 1944 amounted to $4,017,916, an increase of 24.4 per cent over the sales figure of $3,229,252 in 1943. Unfilled orders at the close of 1944 were at a new all-time high for Luscombe and have been substantially increased since then, Klotz stated. Luscombe has since added a third plant in Trenton and has acquired about 600 acres of land near Dallas for development into a model aircraft manufacturing, servicing and operating site.

New HS Props for Grumman Tigercat

The Grumman F7F Tigercat, recently announced by the Navy as ready for combat, completes a trio of top Navy planes to be equipped with Hamilton Standard hydromatic propellers. The other planes are the F6F Hellcat and Vought F4U Corsair. The propeller, made of standard duraluminum alloy, has blades that incorporate one of the latest NACA airfoil sections. They are geared to the engine at a ratio of .45 and are equipped with special governors to assure complete pitch control.

Lear Devices on F7F

The recently announced new Grumman F7F Tigercat uses Lear equipment in three installations. The cowl flaps are operated by a Lear power unit, the carburetor air intake shutters are operated by a Lear linear actuator and the oil cooler application is also Lear powered.

Aero Chamber's New Home

The Aeronautical Chamber of Commerce of America, Inc. has announced that it has changed its name to Aircraft Industries Association of America, Inc. The new name is believed to be more indicative of the membership which includes the aircraft, aircraft engine, propeller and aircraft accessory manufacturers.

Air Associates' Sales

Air Associates, Incorporated, had a net profit of $73,792 after all charges for the six-months' period ending March 31, 1945. Sales for the same period totaled $6,151,026 as contrasted with $6,853,217 for the like period of the previous fiscal year. Unfilled orders come to $6,075,151. The company's backlog of unfilled orders as at May 31, 1945, has increased approximately $7,030,000.

Interstate Record Cited

Interstate Aircraft and Engineering Corporation have produced 100,000 bomb shackles. The shackles, weighing a few pounds, are capable of carrying bombs varying from 100 to 4,000 pounds. Originally designed by Interstate, these shackles have been employed on Lockheed, Douglas and Northrop planes.

The Pace of Victory Permits Only A Congratulatory Handshake!

American Industry merits a decoration for its fine record in the Mighty 7th! But, as our newly decorated Pacific heroes return to combat, so industrial leaders are back into Bond action—consolidating Payroll Savings Plan gains!

Many are working to keep all new subscribers to the Payroll Savings Plan. By selective resolicitation each is being urged to maintain his Bond buying allotment. Many are also using selective resolicitation to urge all workers who increased their subscriptions to continue on this farsighted basis.

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PERSONALS

NASH RUSS has been elected president of Taylorcraft Aviation Corp., succeeding James C. Hart, who resigned. Russ, who is also chairman of the board of Taylorcraft, is president of the Detroit Aircraft Corp. and Detroit Aircraft Products, Inc. . . . PEYTON M. MAGRUDER has been named director of commercial sales for Glenn L. Martin Co. . . . WILLIAM B. STOUT, chief of the research division of Consolidated Vultee Aircraft Corp., is to head Graham-Paige Motors Corporation postwar automobile department. He will continue with Convair. . . . KENNETH MacGRATH, former executive vice president of Air Associates, Inc., has been named president of the corporation, succeeding HAROLD CROW, resigned, and JOHN C. HARROWER has been elected vice president in charge of sales and engineering of Air Associates.

HAROLD F. SCHWEDES, former division manager of the Texas division, North American Aviation, Inc., has joined Menasco Manufacturing Company as director of manufacturing. . . . MAJOR THOMAS D. NEELANDS has been elected to the board of directors of Beech Aircraft Corporation filling the vacancy left by the resignation of E. C. Moriarty. . . . AL HAPKE, JR., is head of the aviation division of the American Petroleum Industries Committee of the American Petroleum Institute. Hapke was former research manager for Republic Aviation Corp., advertising manager of the Bell Aircraft Corp., and a pilot for Pan American Airways, Inc. . . . JULIA M. SCANLAN has been elected secretary of Curtiss-Wright Corp. and R. J. LINDQUIST treasurer of the corporation. . . . EDGAR P. RHODES has been named assistant chief engineer of the Ryan Aeronautical Company. . . . DONALD S. RUSSELL has been made director of contract administration for the Niagara Frontier division of Bell Aircraft Corporation.

BRIG. GEN. GORDON PHILLIP SAVILLE has been appointed deputy commander of the AAF Air Transport Command, replacing Maj. Gen. Cyrus R. Smith, recently returned to civilian aviation. . . . BRIG. GEN. DONALD C. SWATLAND has become chief of procurement division, Air Technical Service Command, replacing Brig. Gen. Orval R. Cook who has left for an undisclosed assignment overseas; COL HORACE A. SHEPARD has been named deputy to General Swatland. . . . COL. T. B. HOLLIDAY, AAF engineer who made electricity the slave of the airplane, has been appointed chief of the engineering division's equipment laboratory.

GEORGE THARRATT, former chief aeronautical engineer with an accessory manufacturer, is general manager of the California division of Lear, Incorporated. . . . D. A. NEWTON has joined the F. J. Evans Engineering Company as air-conditioning engineer of the heating and air conditioning division. . . . E. A. "TED" ROSSER has been named director of agency sales, central region, for Transcontinental & Western Air, Inc., and EDWARD D. GLOVER has been named assistant training supervisor of TWA.

M. LeROY STONER, formerly chief of standards, General Motors Eastern Aircraft division, has been appointed staff engineer, aeronautics department, Society of Automotive Engineers. . . . STANLEY W. BEDELL has been appointed export sales manager of the Sperry Gyroscope Company in addition to his duties as general field service director. . . . FREDERICK W. ROHDE has been appointed manager of quality control at Westinghouse Electric Corporation's aviation gas turbine division. Rohde was formerly chief inspector of Jacobs Aircraft Engine Company. . . . K. R. JAMESON has resigned his position as vice president in charge of sales for Pacific Airmotive, and has established the firm of Jameson & Company.

JAMES M. DIKEMAN has been appointed assistant general counsel of the Civil Aeronautics Administration.

Kelite Opens New Factory in Dallas

Kelite Products, Inc., manufacturer of industrial chemicals for cleaning and processing, has completed construction of a factory in Dallas to which headquarters for the Southwestern Division of Kelite is now being moved from Houston.

F. L. Alexander has been appointed assistant national director of Kelite, with supervision over his new plant as well as all regional offices in the Southwestern Division. Roy South is plant superintendent and office manager. F. J. Oxspring is plant foreman. Earl Lester, divisional manager, is in charge of all Kelite service engineers in the Southwest.

The new building, located at 2501 Cleveland Street, Dallas, has 49,000 square feet of floor space and is equipped with the most modern manufacturing and laboratory facilities.

This expansion in the manufacturing, research and service facilities of Kelite is of particular interest to men in the aircraft industries because Kelite's development has been closely associated with aviation. Process engineers in

Alexander Lester

western aircraft plants were among the first to see the advantages of the scientific methods of pH Control pioneered by Kelite.

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THE KELLETT XR-8 HELICOPTER

Just released by the Army Air Forces, this photograph illustrates a new product whose evolution toward important peace-time achievements has been stimulated by the urgency of war.

The XR-8 is the first American helicopter successfully tested in flight to embody the principle of an *intermeshing twin set* of rotor blades. Structural vibration, long an obstacle to progress in rotary-winged craft, is largely removed. Many related problems have been solved. The need for long power-transmission shafts is eliminated. Weight and drag are saved, increasing pay-load.

Its whirling "egg-beater" vanes enable the XR-8 to fly forward, backward or sidewise with unusual efficiency. Like a hummingbird, it can hover motionless in the sky, or only a few feet above ground. Its vertical take-off and descent permit operation to or from any space that gives safe clearance to the sweep of its own blades.

With sixteen years of design and engineering experience in autogiro and helicopter development, the Kellett organization believes that helicopters will perform a wide range of useful jobs in the new air world of tomorrow.

"Answering Some Helicopter Questions" gives interesting facts about "wingless flight." For free copy, write to Kellett Aircraft Corporation, Dept. SF Upper Darby (Philadelphia), Pa.

KELLETT

OLDEST ROTARY WING AIRCRAFT MANUFACTURING COMPANY

NEW PRODUCTS

Hermetic Seal for Instruments

General Electric Company has developed a method for hermetically sealing electric instruments against humidity, water, dust, fungus, discoloration and other adverse conditions. To obtain a hermetically sealed enclosure, a thick, special, strain-free glass window is fused to a metal ring in a glass-to-metal seal. The glass seal, the soldered joints and the metal ring form a completely hermetic enclosure for an instrument. The final assembly is evacuated, filled with an inert gas through a seal-off tube located in the base, and is sealed off at a pressure slightly above atmospheric. The sealed-in process is now being used primarily on smaller instruments.

Automatic Boost Control

Eclipse Automatic Boost Controls are designed to various single stage-single speed, and single stage-two speed supercharged aviation engines to protect the engine from detonation or overstress and to reduce pilot fatigue. Eclipse-Pioneer will supply complete information and engineering co-operation on request from such companies interested in solution of their engine control problems.

Jack Grounds Plane in Fueling

Utah Radio Products Company has developed a new jack for "grounding" airplanes while refueling. The jack is mounted near the filler cap of the aircraft fuel tank. It provides a simple method of neutralizing any static charges between the aircraft and the fuel nozzle. The jack can be mounted in panels up to 3/16 in. thick and requires 3/8 in. diameter mounting hole. Dimensions required behind mounting are 3/4 in. diameter panel space by 7/8 in. deep.

Shutter Valve For Heat, Air

A new patented heat and ventilator control unit known as the Aero Valve is being produced by Smith-Mautz Company, aircraft parts and accessories manufacturers, Glendale, California. The Aero Valve replaces the old type butterfly unit, the new unit originally being developed for the aircraft industry. It has thirty-six positive control stages, and is designed like a camera shutter, with fifteen to eighteen shutter segments. The unit is available in five model sizes with openings from two to seven inches in diameter.

Wood Auxiliary Tank for A-26

A new type of auxiliary fuel tank, made of plywood, is being made by the Duramold division of Fairchild Engine and Airplane Corporation, and is being installed in Douglas A-26 Invaders before ferry hops to advanced island bases in the Pacific. Plywood fuel tanks were found to be much lighter than metal ones. Bolted temporarily into the empty bomb bay of the plane, they carry enough extra gasoline to carry the plane to its far destination.

New Putty For Aircraft

A new putty used to fill holes, crevices and joints has been developed by the Dolphin Paint and Varnish Co., and it is said not to crumble when exposed to temperatures as low as —60 F. Known as No. 3904 Dolfinite Cold Resisting Putty, it may be applied with a knife or air-pressure gun as needed.

Shot-peened Rod Lacquered

An improved aircraft engine connecting rod that has greater resistance to fatigue and corrosion has been announced by H. S. Vance, chairman of the board of The Studebaker Corporation. The part is now in production at the Studebaker plant in Chicago where research of a year preceded its introduction. Surfaces are shot-peened by a precise system permitting control of peening depths to within five thousandths of an inch. A lacquer spray follows shot-peening.

Bellows and Boots for Switches

Two methods of making switches environment proof have been worked out by Robert Hetherington & Son, Sharon Hill, Pa. One is to put a bellows on the plunger end of the switch and the other is to place a rubber boot over the plunger. There is a need for environment proof switches in damp or wet places, and where dirt, dust and fumes are present, as well as for protecting them at temperatures encountered at 20,000 feet and higher.

Gas Gauges for Lightplanes

Scott Aviation Corporation has announced a complete line of gasoline gauges for every type of installation required for light aircraft. These gasoline gauges are of the direct reading type and are accurate, dependable, foolproof and moderate in cost. Shielded magnetic transmission assures positive vapor and moisture proof seal. In addition to the gear type dial gauge, Model A-21, Scott gasoline gauges are also available in spiral type dial gauge, Model A-22, and gear type with drum gauge, model A22-D. Additional information is available from Scott Aviation Corp., Lancaster, New York.

New Cement for Upholstery

A durable, anti-corrosive, waterproof cement for affixing all types of insulating and upholstering materials, excepting rubber, has been developed by the Dolphin Paint & Varnish Company, Toledo, Ohio, and is being made available to the aviation industry under the label of No. 1275 Waterproof and Rustproof Dolfinite. This cement does not dry hard nor become brittle, but remains flexible, withstanding vibration. Details describing the Dolfinite line of products for the aviation field may be had by addressing the manufacturer.

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FAIRFAX AIRPORT
Kansas City, Kansas

A MODERN INDUSTRIAL MIRACLE

BY WILLIAM B. ZIFF

On the tenth anniversary of the founding of Bell Aircraft Corporation, the publisher of "Flying" tells of the production record at the Bell Bomber Plant, at Marietta, Ga.

"'THREE hundred Superfortresses bomb Japan's mainland.'

"Who would have believed, just after Pearl Harbor, that such punishment could have been meted out in less than three years' time?

"Yet it was only a few days after Japan's sneak attack that Bell Aircraft was notified by the Army Air Forces that the company had been selected to be a major builder of these giant, Boeing-designed B-29's in a plant to be constructed near Atlanta.

"The construction story of this giant aircraft factory, and its production achievements, form one of the industrial miracles of the war. In eight months after taking occupation of the plant, in early 1943, the first two Bell bombers were towed out for the test flights.

"How large is this plant? Well, imagine, if you can, nearly two Empire State Buildings laid end to end inside the main building. Under its roof there would be room for twenty of the world's largest battleships with enough vacant space for sixty-nine submarines and twenty-four PT boats.

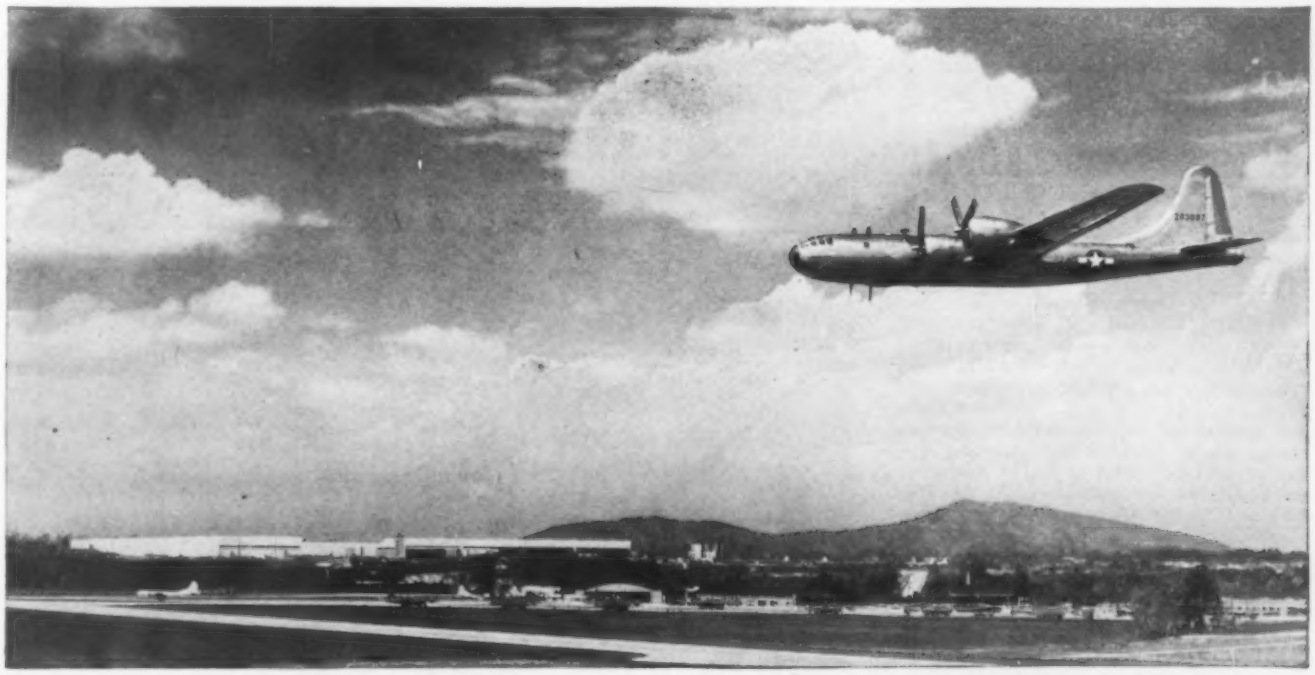
"The B-29 production records being set up by the Bell Bomber Plant are naturally a military secret. But it can be said that production is on schedule and that the schedules have been substantially increased.

"And the mass attacks being made daily by these giant battleships of the skies are conclusive evidence of the teamwork that exists between Bell management and the thousands of Bell employees and the men of the U. S. Army Air Forces.

"The record of the company is clear on the eve of its tenth anniversary. Bell has pioneered in many aircraft developments which have contributed greatly to the war—P-39 'cannon on wings', the first American jet propelled airplane, the P-63 Kingcobra, the Bell helicopter, and the operation and management of this great factory which is the South's industrial miracle of this generation.

"In the coming decade, look to the Bell Aircraft Corporation to continue to be the pacemaker of aviation progress."

★ *Buy War Bonds and Speed Victory* ★



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BELL *Aircraft*

PACEMAKER OF AVIATION PROGRESS

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NIAGARA FRONTIER DIVISION
Buffalo and Niagara Falls, N. Y.
Airacobra (P-39) and Kingcobra (P-63)—Fighters
Airacomet—America's First Jet Propelled Plane
The Bell Helicopter

ORDNANCE DIVISION
Burlington, Vt.
Flexible Gun Mounts and other ordnance materials

GEORGIA DIVISION
Marietta, Ga.
Bell built B-29 Superfortress

62-TON MONTHLY AIR HAUL FROM DETROIT TO FRISCO SEEN

By E. H. PICKERING

The Edward S. Evans Transportation Research has completed several vitally informative studies on the future of air freight. Early this year, they published a study of the potentials of contract hauling of perishables, such as lettuce, from California to Detroit by air, with the conclusion that charges of less than ten cents a ton-mile were practical with such equipment as DC-4's carrying capacity loads. This led to the most recent survey of manufacturers in the Detroit area, who might be potential users of the back-haul service to California on a contract basis. The following question was asked of 1,400 Detroit factories:

"If a reliable, daily, all-air freight service were provided that would leave Detroit at the close of every business day and arrive at San Francisco early next morning, at a rate of $10.00 per hundred, or ten cents per pound, airport to airport, how much poundage would your company be likely to ship in an average month by such service, for redistribution to Pacific Coast points and for export from San Francisco?"

A 30 per cent return of these questionnaires indicated that some 200 firms estimated their total shipments to be 350,000 pounds per month. Six firms would account for 55 per cent of this total. Three outstanding reasons for use of air freight would be emergency, reduction of the inventory, and offsetting local coast competition.

The three leading prospects for the service were indicated to be the small tool and die industry, automobile and automotive parts industry, and the pharmaceutical industry.

Detonation Indicator Adds Payload

On a non-stop New York-Chicago flight in a DC-3, an estimated 240 pounds of extra payload could be carried through savings in fuel consumption by use of the Sperry-M.I.T. Detonation Indicator. The Indicator picks up changes in the frequency of vibrations transmitted through the cylinder walls and translates this information into efficiency of fuel mixture and burning. Installation is made without piercing the cylinder walls.

International

Pan-American Airways, in its annual report for 1944, announced a gross income of $93,000,000 as compared to $27,300,000 in 1940. Last year's total, however, was $32,000,000 below 1943's all-time high. . . . During the first quarter of 1945, Pan-American was operating nearly 1,000,000 passenger-miles per day in carrying a total of 80,189 passengers, principally over routes of the Latin-American division. . . . Pan-American hopes to reinstate commercial air service across the Pacific by the first of the year, as contracts with the Naval Air Transport Service will probably be terminated by that time.

Airline Securities Popular

Donald L. Stralem, partner in the investment banking firm of Hallgarten & Co. of New York, stated in his testimony for State Airlines in the Southeast Case hearing last month at Greensboro, North Carolina, that airline securities will continue to be extremely active in securities trading. Stralem believes that the existing airlines and any new companies that may be certificated by the CAB should have little or no difficulty in disposing of securities in the postwar period.

All American in Brazil

Equipmento All American Aviation S/A, Brazilian subsidiary of All American Aviation, Inc., will begin operations this summer for straight air pick-up service. AAA will own 51 per cent of the stock of the Brazilian company, with native interests owning the remainder. A tri-motored JU-82 is being converted for the pick-up operation.

Domestic Roundup

The Air Transport Association announces that planes of the domestic airlines are flying over a half-million miles a day, averaging 11.39 hours per plane per day in the air. Four years ago, just prior to the war, the daily average was 6.35 hours per plane per day. . . . Braniff Airways has reinstated service between Houston and Galveston suspended since 1942. . . . PCA has extended its routes into New York from Pittsburgh, and on July 2 was to begin operating six daily non-stop flights out of New York into Pittsburgh. . . . Philadelphia, the nation's third largest city, was again to have commercial airline service on July first, after eighteen months of being off the airways. The new Northeast Airport will be served by six airlines on daily schedules, as a result of the CAB's recommendation to the president that funds be made available to complete passenger facilities at the Army-built air field.

Essair in Operation With 2 Daily Trips

Essair, Inc., of Dallas, operating the Civil Aeronautics Board's first feederline certificate, inaugurated operations on July 1 over Route AM 64 between Houston and Amarillo. First trips were the required proving runs without fare passengers. Three Lockheed Electras are being used by the carrier, of which Major W. F. Long of Dallas is president.

Schedule No. 1 called for two round trips daily, leaving Amarillo, Texas, at 7:15 in the morning and 1:20 in the afternoon, and arriving at Houston at 1:05 in the afternoon and 7:10 in the evening. Return trips leave Houston at 7:00 a. m. and 1:35 p. m., arriving at Amarillo approximately five and a half hours later. Intermediate points served will be Lubbock, Abilene, San Angelo, and Austin.

Ted Gibson Heads Braniff Maintenance

Ted Gibson has been appointed chief of maintenance, Braniff Airways, Inc., Dallas, taking place of Charlie Johnson, killed recently in an automobile accident. Gibson's promotion culminates ten years in the Braniff maintenance department.

Braniff, United, AMEX Win Safety Awards

Sixteen American airlines completed their 1944 operations without a single fatal accident, the National Safety Council reported last month in announcing its 1944 Aviation Safety Awards.

Among the airlines flying from 10,000,000 to 100,000,000 passenger miles in 1944, Braniff was the group winner. Other perfect records of no fatalities in this group were compiled by Pennsylvania-Central Airlines Corp., Delta Air Lines, Western Air Lines, Chicago & Southern Air Lines, Continental Air Lines, Mid-Continent Air Lines, National Airlines, Northeast Airlines, Pan American Airways (Atlantic Division), Hawaiian Airlines, Ltd., and Colonial Airlines, all of which earned Certificates of Safe Operation. Braniff, however, up to the end of 1944 had flown the most passenger miles in its group since its last fatal accident (328,226,218), and thus won the first place award.

Among the largest airlines (those flying more than 100,000,000 passenger miles in the year), United Air Lines, Inc., was the group winner. In this group, Eastern Air Lines, Inc., and Northwest Airlines, Inc., also had no fatality records, but these two lines had flown fewer passenger miles since their last fatality than United Air Lines.

American Export Airlines won the award in the group of airlines operating less than 10,000,000 passenger miles in 1944. It was the only line in this group with a no-fatality record. At the end of 1944 it had operated 18,725,766 passenger miles since its last fatal accident.

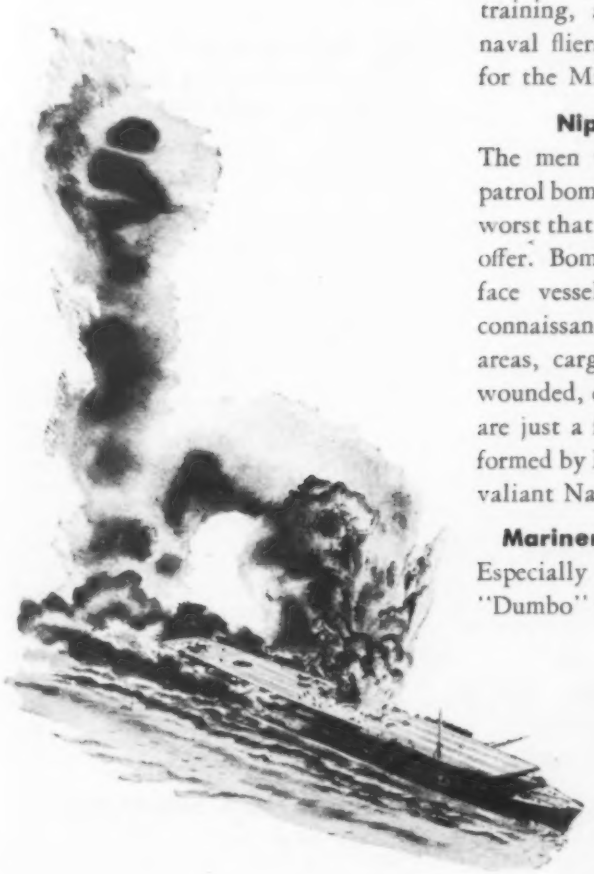
ALL-METAL DE HAVILLAND DOVE, a new small transport for eight to eleven passengers and a crew of two with dual control, is sketched above. It has a nose-wheel undercarriage and has de Havilland Gipsy engines driving de Havilland constant-speed feathering and braking propellers. The Dove is one of the British industry's bids for postwar markets.

Curtains for a Carrier: Martin Mariners cripple a Shokaku-class Jap flattop off Leyte.

Wherever Navy airmen strike

IT'S TAPS FOR THE JAPS!

NO wonder Navy airmen are bad news to the Nips! With the world's best planes, most complete training, and highest morale, our naval fliers are more than a match for the Mikado's myopic monkeys!



Nipponese Nemesis

The men who fly Martin Mariner patrol bombers, for example, take the worst that the elements or enemy can offer. Bombing enemy subs or surface vessels, flying long-range reconnaissance missions over Jap-held areas, cargo-carrying or evacuating wounded, effecting rescues . . . these are just a few of the vital jobs performed by Martin Mariners and their valiant Navy crews.

Mariners Mean High Morale

Especially important are the "Dumbo" missions flown by the big 24-ton Mariners. Joining carrier-based planes in the thick of the fight, Mariners land, despite stormy seas or enemy fire, to rescue airmen downed in combat. Thus skilled Navy pilots and gunners live to fight another day . . . and morale among carrier-based airmen is kept high. Another reason why the Mariner is a headache for Hirohito!

Tomorrow, Too

Remember, the usefulness of these rugged Mariners will not end with the war. Their stout construction, long range and complete dependability make them ideal for tomorrow's overocean airlines. Keep your eye on the Martin Mariner, after Victory! THE GLENN L. MARTIN CO., BALTIMORE 3, MD. THE GLENN L. MARTIN-NEBRASKA CO., OMAHA.

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AIRCRAFT
Builders of Dependable Aircraft Since 1909

HOLD IT, MISTER! Don't cash in those War Bonds! Because each War Bond you cash in *doubles* Uncle Sam's job . . . gives him the dual task of selling bonds to carry on the war and selling bonds to replace those cashed in! Hang on to those War Bonds!

Coyote Hunt, New Plane Display Scheduled for Oklahoma Flying Farmers Annual Meet, August 2-3

Display of postwar planes and demonstration of an aerial coyote hunt will feature a meeting of the Oklahoma Flying Farmers August 2-3 at Stillwater, Okla., where the utilization of airplanes in agriculture will be discussed.

Part of a forum discussion will be devoted to discussions of improvements farmers desire to make airplanes more readily adapted to farm and ranch use. Secretary of Agriculture Clinton P. Anderson has been invited to address the meeting, which will be held on the Oklahoma A. & M. College campus.

Dr. Henry G. Bennett, Flying Farmer leader, has invited twenty-three manufacturers of lightplanes and twelve makers of helicopters to participate. Four of those who replied immediately promised display of nine new airplanes. A banquet for the farmers, the aviation industry and the press will be held August 2 at 7 p. m. with Oklahoma A. & M. as host.

Heinie Bomhoff and Troy Coates in a gunner plane and four spotter planes will demonstrate "how to do an aerial coyote hunt" on August 3 at dawn, with farm fliers forming an escort to take press representatives along. Later that morning Al Guthrie will stage an aerial dusting demonstration. Arnold Nicholson, managing editor of *Country Gentleman*, will address the farmers.

Flying farmers, their wives and prospective farmer-fliers from other states are invited to attend. One recently inquired from Ohio if he could fly down for the annual get-together and the Oklahomans extended him a hearty welcome. "There will be others to come from outside Oklahoma—just you wait and see," said Dr. Bennett.

Aeronca Begins Making Parts for Mass Output of Civilian Airplanes

Gearing up to resume production of civilian airplanes before Labor Day, Aeronca Aircraft Corp. was to begin making parts on June 28 for later assembly into two models, the sixty-five-hp. Champion and Chief.

John Friedlander, president, said "we have no fear that we cannot obtain the necessary materials to reestablish personal plane production in full accordance with government regulations." He said WPB can issue a special priority to avoid bottlenecks arising, for example, when only one or two small parts such as magnetos, instruments or throttle controls, are holding up production of an otherwise completed job.

Aeronca is negotiating with Defense Plant Corp. to take over and operate DPC facilities at the Aeronca plant, where military assembly jigs for the C-46 will be removed by July 15, thus releasing thousands of square feet of factory space for civilian output.

Helicopter Training Now Centered at Texas Field

The nation's helicopter pilot training program, newest development in the AAF Training Command's operations, has been shifted to Texas from Chanute Field, Ill., with the designation of Sheppard Field at Wichita Falls for the new-fangled training.

Only one field will be used for 'copter pilot training for the present, according to Training Command plans.

"Flying Week" for St. Louis

Plans for the observance of "flying week" in the greater St. Louis area have been announced by the Aviation Foundation of St. Louis, a civic, non-profit affiliate of the National Aeronautic Association. Mayor Aloys P. Kaufmann has issued a proclamation designating the week of July 16-22 inclusive.

Unique Conveyorized Engine Cleaning System Improves Army Overhaul at Rome ATSC Repair Base

A new automatic conveyor cleaning system has produced phenomenal improvements in the overhaul of airplane engines at the Air Technical Service Command's Rome, N. Y., repair shops.

Working on an overhead chain type conveyor belt, the new system cleans disassembled engine parts better than previous methods and twice as fast. Engineers managed to fit the line, with its more than 400 feet of tanks and washers, into a space of only forty-six by eighty-six feet. Apart from the conveyor, principal elements of the cleaning line are four large tanks and three industrial spray washers. Engine parts are hung on the conveyor immediately as they come off the end of the disassembly line, and are not touched by human hands again until they emerge from the other end of the line three hours later, so thoroughly cleaned further hand-cleaning is unnecessary. Only a handful of employes is required and a tiny two-horse-power electric motor drives the line.

Parts are hung, either individually, or in baskets, at the end of the disassembly line. They are lifted high overhead and into the first spray washer, which degreases the parts. Utilizing high-powered sprays of alkali solution, this flushes off all external dirt and grease. Like the other washers, spray pressure is maintained at seventy feet per square inch.

The parts proceed slowly through the first three soak tanks and then into another washer. This washes off all the carbon which has been dissolved up to this point. From here they continue through a double cleaning tank, and then into the big five-stage washer.

The first two stages in this washer remove all dissolved carbon, as well as the residue of carbon removal compound adhering to the parts. An alkaline spray in the third stage flushes off all the fluid remaining from the first two stages. The third stage utilizes clear hot water to clean off the alkaline spray and the final stage is a hot air dry.

The parts come out of the last washing clean and dry, and are ready for buffing, air-blasting or other final touches.

Cleaning solutions in all the tanks are maintained at a temperature of 140 degrees Fahrenheit by steam heat. The heat is supplied through coils which have a capacity sufficient to raise the temperature from 70 degrees to 150 degrees in six hours. These coils are installed in vertical banks along the sides of the tanks to prevent the loss of heat which would result from laying the coils on the bottom. Heavy sludge forms on the coils if they are installed in this latter manner.

Simplified Let-Down Procedure Halves Bad Weather Landing Time

The Civil Aeronautics Administration has demonstrated a new procedure for landing airplanes in bad weather in which landing time has been reduced 50 per cent. Only standard, existing radio equipment was used.

Under the new system, arriving planes are "stacked up" over a fan marker about ten miles out for holding procedure, with 1,000-ft. separation. Five planes were used in the test, and each pilot in the approach sequence was given five minutes advance notice of the time he should leave the fan marker, with allowance for one-minute error either way. The pilots then arranged to leave the fan marker at the proper time, headed for the range station by varying their holding paths, and without further instructions from the controller. Headed to the airport, each plane was stepped down as the one below left its level.

Under existing procedure, arriving planes are stacked up over the range station itself and it is usually located immediately adjacent to the airport. By starting descent farther out, from the fan marker, the pilot can approach on the range leg in a straight-in approach, pass over the range station at final approach altitude, and make a normal let-down.

NATA Charges Surplus Sales Destroying Small Business; Asks Probe

Pleading for protection of aircraft sales and service operators from competitive and unfair surplus aircraft disposal practices, Roscoe Turner, president of the National Aviation Trades Association, has called for a Senate small Business Committee investigation of surplus aircraft disposal.

Citing previous protests to the DPC which were ignored, Turner wrote Senator James E. Murray, chairman of the Committee, that NATA requests an investigation "into government competition against the independent aircraft service operator as exemplified in the sale of surplus airplanes direct to private buyers by DPC's Surplus War Aircraft Division." DPC, he charged, is "tearing down the economy of free independent private enterprise" and is "depressing full employment in our division of enterprise." He added that NATA is prepared to submit evidence of destructive effects of surplus aircraft disposal and of dissatisfied buyers. "We are convinced," Turner pointed out, "that drastic steps must be taken to protect small businessmen, not only in the aviation industry but in all lines of business and industry, against destructive policies and procedures" followed by DPC's Surplus War Aircraft Division.

Mrs. Jimmy Doolittle Elected NAA Secretary

The board of directors of the National Aeronautic Association has announced that Mrs. Jimmy Doolittle has been elected secretary of the Association. Mrs. Doolittle will serve for the 1945 term, as successor to Richard C. Palmer, Aircraft War Production Council chairman, now vice president in charge of NAA's Air Defense division.

100 Combat Planes Declared Surplus Daily; Prompt Scrapping Ordered

The Surplus Property Board said last month combat aircraft were being declared surplus at the rate of more than a hundred a week. All flyable planes, determined by the Reconstruction Finance Corporation to be commercially unsalable will be flown by the Army or the Navy to RFC fields for salvage and scrapping. The board has ordered the prompt salvaging and scrapping of all commercially unsalable surplus aircraft and related parts and equipment. After salvaging, the scrap may be melted into an alloy ingot, or it can be processed chemically to produce pure aluminum.

Special Planes for Air Parts Service

Plans for operating specially-outfitted delivery planes to fly aircraft parts and equipment to customer bases throughout the nation have been announced by Walter B. Hawkins, president of Air Parts, Inc., of Glendale, Calif. One-day service to most points is the goal, and two and three-day service to remoter sections will be offered. Air Parts, Inc., operates off of a Grand Central Airport in Glendale.

New Wisconsin Law Authorizes High School Flight Instruction Costs

The first state law authorizing high school contracts for student flight instruction has been passed in Wisconsin, whose department of public instruction worked out a recommended program of four hours of flight experience to supplement classroom aeronautics studies, with technical assistance from the CAA. It offers a model for the enabling legislation required in many states before high school flight instruction can be given.

It provides as follows:

"The board of any school district which operates a high school may contract with flight operator schools approved by the Civil Aeronautics Administration for courses in flight instruction approved by the State Superintendent. The cost of such contract shall be paid out of school district funds and shall be included in the cost of operation and maintenance of the high school districts which enter into such contract for the purpose of computing tuition costs."

Other states which have drawn up plans for flight experience in connection with high school aeronautics courses include Alabama, California, Colorado, Connecticut, Illinois, Michigan, Ohio, Pennsylvania, Tennessee, Texas, and the District of Columbia. Technical assistance in framing the flight instruction programs has been furnished by the Civil Aeronautics Administration.

NAA Maps Permanent Aviation Conferences

The executive committee of the National Aeronautic Association has announced plans for the establishment of permanent conferences consisting of cross-sections of national business, professional, civic and consumer groups to study and evaluate all phases of aviation. The conferences will follow the pattern established by the existing Joint Airport Users Conference formed by NAA in July, 1944. Plans also provide for calling regional gatherings and parallel activities at the community level.

WORLD WAR I OPERATIONS in France when he was 91st Squadron crew chief and unofficial test pilot were recalled recently when R. W. Stone, shown here with a Salmson, opened aircraft service business on Brownville's Municipal Airport. More recently, he's flown the last sixteen years for Pan American in Mexico and Central America and has been in charge of PAA pilot training and senior instrument instructor at the Brownsville base. He holds Airline Transport Pilot Rating No. 520. Stone and Brownsville's flying mayor, Dean Porter, invite private fliers everywhere to pay them a visit.

Chidlaw, Jet Expert, Named Deputy ATSC Head

Major General Benjamin W. Chidlaw, former commanding general of the 12th Air Force in the Mediterranean Theater, has been named deputy director of the Air Technical Service Command. General Chidlaw is a command pilot and jet propulsion expert and has held positions associated with AAF experimental and development projects. He was awarded the Legion of Merit last year for his successful direction of the development of a jet propelled fighter plane.

New Navigator Plotter Has Many Uses

Jardur Aviation Company, New York, is making a new air navigational plotter, a compact precision instrument having a tolerance within a fraction of a degree. It is said to meet the plotting requirements of all student, private and commercial pilots. It is not complicated, and no math is required. Made of durable laminated vinylite, the instrument eliminates the use of straight edges, dividers, protractors, parallel rules and distance scales. It may be used for chart work, radio and celestial navigation.

Gen. Knudsen Resigns

The War Department has announced the resignation of Lt. Gen. William S. Knudsen effective June 1. General Knudsen left his job as president of General Motors Corporation to undertake the greatest production job in history — the conversion of America's peacetime industry to the needs of war and the building of hundreds of new plants required to produce war materials. He had been connected in various executive positions with the organization and development of U. S. war production for the past five years.

Air Education Congress

The University of Denver, Social Science Foundation, will offer the first Denver Congress on Air Age Education, July 23 to 28. The objectives of the Congress grew out of the recognition of the implications of developments in air communication and transportation for the social, political, economic and cultural institutions of modern society. The lecture-conference method will be utilized in the Congress.

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Municipal Airport **Detroit 5, Mich.**

CAP Cadet Goal Cut to 100,000 Boys and Girls; Improved Quality, Training Expected to Result

A greatly strengthened Civil Air Patrol, as well as a finer trained reserve for the future of air power and civil aviation in the United States, was predicted with the announcement by the Army Air Forces that the CAP Cadet goal has now been set at 100,000 boys and girls between the ages of fifteen and seventeen inclusive.

Sharply contrasting with the goal of 250,000 Cadets announced a year ago, the whole CAP program can now be stabilized and more attention given to quality of personnel, training and performance.

Some state Wings have already attained their quotas in the new program, and have turned their attention to more emphasis on a more thorough training objective for both Cadets and senior members.

With the announcement of the reduced goal, the AAF said there are more than 80,000 Cadet members and 55,000 senior members active in the CAP in forty-eight states despite the drafting of several thousand members each month.

State Wings which have met their goals will establish waiting lists for Cadet applicants who will be processed as vacancies occur.

As a result, Cadets indifferent and lax in performance of duties will be replaced by those on waiting lists.

The quotas will be assigned by each Wing to all of its units.

Here are the state quotas in the new program: Alabama 1,000, Arizona 450, Arkansas 2,200, California 5,500, Colorado 1,300, Connecticut 1,400, Delaware 250, Florida 1,300, Georgia 1,200, Idaho 500, Illinois 6,000, Indiana 3,000, Iowa 2,000, Kansas 1,900, Kentucky 1,700, Louisiana 1,000, Maine 700, Maryland 1,100, Massachusetts 3,000, Michigan 6,000, Minnesota 2,000, Mississippi 500, Missouri 2,200, Montana 500, Nebraska 1,100, Nevada 250, New Hampshire 700, New Jersey 3,200, New Mexico 600, New York 9,000, North Carolina 3,200, North Dakota 500, Ohio 6,000, Oklahoma 1,700, Oregon 1,200, Pennsylvania 8,000, Rhode Island 850, South Carolina 750, South Dakota 500, Tennessee 1,600, Texas 6,000, Utah 1,100, Vermont 350, Virginia 1,500, Washington 1,500, West Virginia 1,000, Wisconsin 2,400, Wyoming 300.

States which have already met their goal are: Arizona, Arkansas, Colorado, Delaware, Florida, Idaho, Kansas, New Hampshire, New Mexico, North Carolina, Oregon, Rhode Island, Utah and Vermont.

Cadet Camps for 10,000 Under Way

The greatest field movement of Civil Air Patrol Cadets since the organization was started is assured during the next two months with the announcement by the Army Air Forces that 10,000 cadets will be sent to fifty-six installations for visits up to fourteen days.

Last summer, 7,400 Cadets were sent to forty-eight AAF fields.

Meanwhile, several Wings and their respective units are planning or already have in progress additional summer camp programs and week-end maneuvers before school opens in September.

State quotas for the Cadets were expected to be completed as we went to press.

Pittsburgh Squadrons Sign 600 Cadets in Week

Here's something of a record: Over 600 CAP Cadets were recently recruited in a seven-day drive in the Pittsburgh, Pa., area, with Squadron 61 signing up 515 and 104 going to squadron 64.

Here's how: The major started the recruiting program with an official proclamation declaring "Civil Air Patrol Cadet Week." There were spot announcements on all five Pittsburgh radio stations, advertisements in the three local daily papers; radio talks given by Major W. W. Castor, 6th Group commander; a full page of pictures in the Post-Gazette on Cadet activities; displays of training aids and equipment in the downtown theater lobbies; over 1,000 large and attractive printed posters in shop and store windows and a series of programs given by Cadet officers explaining the benefits of CAPC training at Pittsburgh public high schools assembly programs.

Colorado Gets $20,000 from State Legislature

The Colorado legislature has appropriated $20,000 for use by the Colorado Wing of the Civil Air Patrol, which will provide funds for units throughout the state to expand the CAP Cadet program. Members of the legislature were guests of the CAP on two different inspection tours of CAP activities. First draft of the appropriation bill was prepared by Lt. Harry H. Ruston, a Denver lawyer and CAP'er.

$500,000 CAP Funds in War Finance Bill

A $500,000 item for Civil Air Patrol operations during the coming fiscal year was contained in the War Department appropriations bill which passed the House late in June. Senate passage was delayed but was expected early in July.

CADET ACTIVITY IN FLORIDA has included many notable training features arranged by the adult organization. Here is an instructor giving a practical lecture on propeller operations to a bevy of nattily-uniformed girl Cadets. The scene is in the shops of the Lodwick School of Aeronautics at Lakeland.

FOUR AIR MARKERS in Fort Worth and others in nearby towns and cities were the first goals of Group 11 Cadets. Here's one of their markers—a giant sign atop grain elevators of the Universal Mills. Cadets who painted it are 1st Sgt. Nelson Embleton, T/Sgt. Noel Smith, S/Sgt. Gordon Smith, Sgt. Robert Gossett, Sgt. Charlie Nesbitt and Pvt. Aubrey Tarwater.
—(Gordon Smith Photo.)

Here's a Busy Fourteen-Day Period for CAP

In a fourteen-day period recently, the Colorado Civil Air Patrol: (1) Rushed a stockman suffering from a skull fracture from Grand Junction to Denver in a CAP plane over the Continental Divide for emergency surgery which saved his life, (2) bombed more than 200 Colorado towns with paper leaflets to launch the 7th War Loan, (3) furnished a trained, fast working crew of CAP Cadet fire fighters who proved invaluable in combatting a brush fire in Colorado Springs, (4) organized new squadrons and flights in Delta, Montrose, Keensburg, Eaton and Lafayette, (5) saved the life of a man seized with a heart attack by flying vital medicines from Montrose westward into the Paradox Valley, (7) gave over 200 CAP Cadets orientation flights in Army aircraft assigned to the Wing, and (8) laid plans for a glider-borne invasion demonstration at the CAP field in Denver.

Cadet Dance Nets $200 for Hospital

Two hundred dollars for the new Ohio Valley General Hospital building fund was raised recently by Civil Air Patrol Cadets of Flight D, McKees Rocks, Pa., commanded by W/O Joseph Patrowsky. A benefit dance netted that amount for the new hospital. Over 60,000 leaflets advertising the dance were dropped from CAP planes in which Cadets were "bombardiers." Airplane rides were offered as door prizes.

SCHOLARSHIPS for Fenn College aeronautics ground school course were won by CAP Cadets Ralph Stipley of the Cleveland, Ohio, Group, and Acree Shreve of Willoughby Group's Squadron 2. Major George H. Scragg, Ohio Wing public relations officer, is shown introducing them to Instructor Harry E. Russell.
—(White Motor Co. Photo.)

MECHANICS COURSES FOR CADETS are being conducted throughout the nation. Above is an unusual activity in which the Kansas Wing's medical detachment, commanded by Capt. Dory J. Neale, is instructing not only CAP Cadets but a representative group of GI's from the Topeka Army Air Field. Capt. William H. Wells is Wing engineering officer. Shown below are Cadets of Michigan Wing's Squadron 639-4 at Henry Ford School receiving instructions on aircraft engines from Paul Terry, a Ford instructor.
—(Upper Photo by AAF; lower by Michigan Wing, CAP.)

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It is not a substitute for plotting boards, but between the hand-held computer and the plotting board. It comes complete with leg straps, pencil holder, freeing the pilot's hands for 99 per cent of the time and having his log sheet available when he wants it.

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BOOK REVIEWS

Aircraft Engines of the World, *by Paul H. Wilkinson, published by Paul H. Wilkinson, 216 East 45th St., New York City, price,* $8.50.

The 1945 edition of this international reference book is now off the press. While the concise standardized style of the book remains the same as for 1944, the size has been increased to 352 pages. New features include a section for Jet Propulsion Engines and Gas Turbines. The U. S. A. and British sections are right up to date, and the collection of photographs and data of recent German and Japanese engines is particularly noteworthy.

Thirty-seven new aircraft engines and more than 200 engines are now included in the tabulations.

NEW LITERATURE

Lonn Manufacturing Co., Inc., *Indianapolis, Indiana,* has released a new catalog describing their complete line of Lonn Air Saver Blow Guns, Spray Guns and Water Savers, with physical specifications and tips on where and how they may be used. Write on your company stationery for your copy. Address Lonn Manufacturing Co., at P. O Box 394, Indianapolis, and ask for Catalog No. 24.

Pesco Products Co., 11610 *Euclid Ave., Cleveland 6, Ohio,* has published a booklet on "Aircraft Accessories for 400 Cycle Motor Operation," copies of which will be sent to readers upon request so long as the supply lasts.

The B. F. Goodrich Company, *Akron, Ohio,* has published a forty-six-page booklet on "Care and Maintenance of Airplane Tires and Tubes," featuring a discussion of preventive maintenance. Illustrated and printed in two colors. Copies are available upon request.

Manufacturers Screw Products, 222 *W. Hubbard St., Chicago* 10, *Ill.,* manufacturers of the "Stronghold" line of fastening devices, is issuing free to industrial users a handy table of Decimal Equivalents of Twist Drills, printed in pocket size card form. State name and title of person to whom card should be sent. Address—Engineering Department.

Turco Products, Inc., 6135 *South Central Ave., Los Angeles* 1, *Calif.,* has prepared an illustrated thirty-six-page booklet in Spanish on airline maintenance. Essentially a service manual, the booklet is packed with information on modern chemical methods for speeding and improving exterior and interior airplane maintenance, engine overhaul, corrosion prevention, plating operations, and airport maintenance. Step by step procedural sequences are given and abundant specification data and formulae are provided.

The booklet is offered without cost to airline operators and maintenance engineers on company letterhead request.

Continental Machines, Inc., 1301 *Washington Ave. S., Minneapolis* 4, *Minn.,* has announced a new DoALL correspondence course titled "Science of Measurement", consisting of a group of eight lessons for industrial and vocational gage training programs.

Nothing connected with precision measurement has been overlooked. Clearly and concisely written, with complete data, questions and answers, this course should give even a novice a working knowledge of the subject.

The eight lessons are spaced to cover a two months' period. Mailings are made direct to the homes of inspection personnel on the basis of one lesson each week.

The course is available to both schools and industry in training their personnel. Detailed information on how these lessons may be obtained can be secured by writing Continental Machines, Inc.

Pratt & Whitney, Division Niles-Bement-Pond Company, *West Hartford, Conn.,* has just completed printing a new catalog covering Kellerflex Flexible Shaft Machines and Equipment. This book presents a large line of Kellerflex machines in very clear fashion, is printed in two colors and contains numerous illustrations. Also, for the first time many details of the construction of the various handpieces and attachments available are shown.

B-W Superchargers, Inc., *Milwaukee, Wisc.,* has issued a well illustrated and instructional booklet giving something of the history of supercharging, the mechanical principles of the Roots type, positive displacement superchargers, methods of manufacture and applications. Copies are avaliable on request.

Johns-Manville, 22 *East Fortieth St., New York* 16, *N. Y.,* has prepared a new 12-page booklet especially for use by aircraft designers, engineers, builders and maintenance superintendents. Titled, "Johns-Manville Products for the Aviation Industry", it provides information on scores of asbestos materials which are particularly adaptable for use in aircraft manufacture and operation, as well as in airport construction. Complimentary copies available upon request. Write for Booklet AV-1A.

Eclipse-Pioneer Service Manuals Available

Eclipse-Pioneer division of the Bendix Aviation Corporation has just released four service manuals covering propeller governors, boosters, pumps and retracting units. Profusely illustrated, the service manuals cover (1) aviation electric propeller governor control heads, (2) aviation voltage booster dynamotors, (3) aviation fluid pumps, filters, valves and rheostats, and (4) aviation retracting units.

Each manual has sections dealing with installation; operation; service, inspection, maintenance, lubrication; disassembly, cleaning, inspection, repair and reassembly; and test procedure.

In addition, a parts catalogue is incorporated to facilitate the procurement of replacement parts. Exploded view drawings show the complete breakdown of all available parts and sub-assemblies.

Copies of the service manuals are available to aviation service and repair organizations from the Technical Data Section, Eclipse-Pioneer Division, Bendix Aviation Corporation, Teterboro, N. J.

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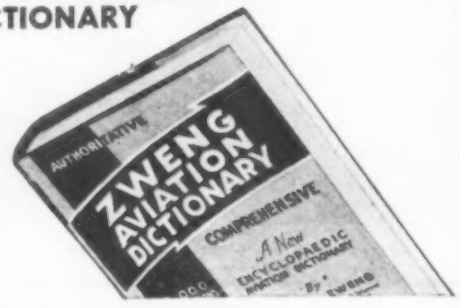

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NORTH HOLLYWOOD, CALIFORNIA

By TONY HAGMANN

Los Angeles . . . A Santa Ana is a norther with the heat turned on. It comes from some place (probably Texas) and fills Los Angeles with a warm wind like Big Spring has in June. It also carries small stones, tumble weeds and sand which fill the eye. Speaking of eyes, we imagine we know the reason so many planes fly low in a Santa Ana. It's the skirt clutchers. Not many girls wear hats in California, so in a high wind they grab the next best thing. City gals, whee! We wouldn't tell you about this, but the weather gets top billing out here over all other news. And there is so much of it.

The aviation head of the Chamber of Commerce, Glen B. Eastburn, gave us a decided jolt. Los Angeles has a master plan for airports, just like Dallas. Probably copied it from us. But they have fifty-five studies of airports and twenty-five are now in operation, he said. Considering the size of this city against Dallas, our sixteen loom up like a Long Beach fog bank, and that is looming. He gave us a map of the city with studio locations in red dots so we wouldn't fly over them. Seems they didn't want people flying over; it upsets the sound recordings. But that was back in the days when the only war we had was trying to get our own way and lead didn't enter into it, or Japs. Mr. Eastburn said the L. A. Municipal airport (Mines Field) was receiving private planes now and by December first they expect to have it decamouflaged so you'll recognize it for an airport instead of a golf course. We got to him for a coke. We gave him a passport to Texas and he may collect from Hart Bowman soon as he uses his valuable paper. Another flying fan in the Chamber of Commerce is Mr. Taylor (didn't get his initials) who complimented us on SOUTHERN FLIGHT'S stand in private aviation. We puffed up like a cream-puff.

Beating the trail to Burbank again (it's hard to stay out of that town), we called at Adel Precision Products Corp. They are smart people and it shows up the minute you enter the lobby. Receptionist Elsa Hall is the nugget who greets you and checks you in with precision and charm. She has one of the nicest smiles—you really don't mind waiting. The president of Adel, Ray Ellinwood, goes for gadgets that work at the push of a button.

Greeted by Kay Burton who almost won her Texas citizenship while representing Adel in Dallas, we were ushered into the offices of Wing Commander Jim Goodenough who is a short snorter and proved it besides being a research man, and John W. Kelly, chief engineer. We didn't meet Al Reed, but understand he was once chief test pilot for Boeing and is doing work on a G suit. This has nothing to do with G strings.

To get back to the push buttons, they have a honey for cargo planes. Instead of using the elbow on the door, push an Adel button and she pops open like a popcorn kernel under a brush fire. Or if you are figuring on building a jet job, see Adel. They have a simple system for transferring fuel. Adel is known for their hydraulic bar, but we won't mention it, or they might think up a simple system to replace that. Think of the consequences!

Our five-dollar-a-year spy told us to call on Hawley Bowlus out in San Fernando. He is the Bowlus of glider fame and we've heard it said he thinks ten years ahead in this aviation business. So we checked with Hawley and he admitted having something up his sleeve for the private pilot. Said "it is something so outstanding and unusual I don't even believe it myself." Next week he intends to fly the new-way-to-spend-your-war-bonds and we're invited. We'll let you know all about it, hear?

Dallasites who've been out here to see one thing or another since we have, include: Ben Branson, chief pilot at the Dallas Mod Center. He may bring home a P-80, at least we heard he's courtin' with one. . . . Allen Guiberson was here for a few days. . . . Don Marshall . . . and Commander Earle Chandler, Navy representative, stationed at NAA, whom we missed as we did Fleming Waters, drat it. This here place is too big.

For dessert we jeeped out to Venice and took a peek at the Skycraft. This place is being built by the brothers Perkins, "Cy" and "Bill". Their engineer is Dwight Huntington, who's been foolin' with aviation since '19, I guess. "Cy" and "Bill" are from Wichita,

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Major W. F. Long, Pres.

Kansas, and Bill started to work for Walter Beech in the days when "six planes was a big order." He was an old man then, about fifteen. Walter Beech kept him on the pay roll during the indigo days because he knew every jig and thingamahjig and how to use 'em, and because he was a farm boy who really liked to work. It shows up here too. They have one sweet little plane in the making. "Cy" was too busy for us to find out how he got interested in aviation, but he talks our talk in knowing what kind of a plane the public wants, and thinks they have it. Well, it is a dillie . . . our trouble is we want one of each. . . . Bye now.

Birmingham, Ala.—*by Edith Wideman.* The Municipal airport became even more of a beehive than usual these past few weeks. First, there were throngs with ovations greeting General and Mrs. Courtney Hodges who arrived via Delta to be honor guests of the city for a day—then the Airmada show arrived and demonstrated the air power which made the U. S. supreme in the skies. The planes ranged in size from an AT-6 advanced trainer to a giant B-29 and included a B-17 Flying Fortress, a B-24 Liberator, a B-25 Billy Mitchell, a P-38 Lightning, a P-47 Thunderbolt, a P-51 Mustang and a C-47 hospital ship. Ramps were built for the milling visitors to inspect the ships their war bonds had bought. The Airmada was sponsored by the Aero Club in connection with the bond drive with CAP Cadets assisting local officers with traffic.

Eastern found an opening to inaugurate new services giving Birmingham two new flights a day to Memphis, one direct service to Chicago via Nashville and Louisville, two direct services to Miami via Montgomery and Tallahassee and one additional service to Atlanta. The Vulcan Flyer was heralded back into service with Mayor Cooper Green, Eastern's Katherine Sigler and Johnnie Daniels along with the "firsts to ride again" participating in the broadcast. In and out of the various activities were planes being ferried into the field to be stored at Southern Airways. Most of these planes are primary trainers for which the DPC is finding storage space. PCA has literally run over the sides for space in the administration building and is sharing part of the manager's office in preparation to opening their service to New York.

The Aero Club had their gala annual affair —cocktails, installation of officers, banquet and floor shows 'n everything gay. Brownie Hill is heading the newly elected officers as president.

We just learned that aviation reporter for the *Birmingham Post*, Ernest Peyton, hailed from Fort Worth—so we had great fun raking up our mutual Texas friends, and having a real fat chewing session in regards thereto. Frances Peacock who is being welcomed back from sick leave joined in with us and made it a three point landing affair.

Upon quick call t'other day from the state aviation commission via Ed Stanford, planes from Southern Airways, Alabama Polytechnic Institute and several private planes, including those of CAP Wing Commander Harold Wood, Eddie Broadbear and Arthur Taylor, were flown to Montgomery to furnish air transportation to the aviation committee of the state legislature for an inspection tour of Camp Rucker. Although for many of the senators and house members this was their first flight, they proved themselves real veterans when some of them had the experience of bad weather.

The Southwestern Aviation Education Conference, chairmaned by Dr. Charlie Gilmore, co-ordinated aviation programs of eleven Southeastern state departments of education between mountain climbing, square dancing and Tennessee hams. The conference was spon-

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sored by the Tennessee state department of education, Aviation Education Service, CAA, Tennessee Bureau of Aeronautics and National Council on Education. Alabama, Arkansas, Florida, Mississippi, North and South Carolina, Georgia, Virginia, Kentucky, Tennessee and West Virginia were represented with Dr. Edgar Fuller of CAA and Ken Newland of Stephens College acting as consultants.

Kansas City, Mo.—*by Marion Melcher.* What do you mean tell you about flying here? It's been raining kittens and puppy-dogs for nigh onto three months and we're a little tired of it! And then when the rain did sulk a few days, didn't the wind come howling around, smashing a couple of planes, and sending a few into the fencing along Richards Road! However, between the drops the boys and gals are carrying on, and one thing's sure —drizzles produce heaps of hangar flying!

Read a complaint in SOUTHERN FLIGHT not so long ago that because of the local traffic the hungry plane passengers can't find dining space in Milleman-Gilbert's restaurant in the terminal. They *do* serve excellent food, and the personal inspection of each plate as it leaves the kitchen is one of the reasons why the natives like to eat there too. Someone pointed out, however, that there's one advantage to standing in line—you can get in the cigarette queue at the same time!

Several of the Brazilian army officers toured our 5-minutes-from-town airport and TWA's shops the other day, following their attendance at the United Nations conference in San Francisco. Air Forces officers from Leavenworth were among those who greeted them.

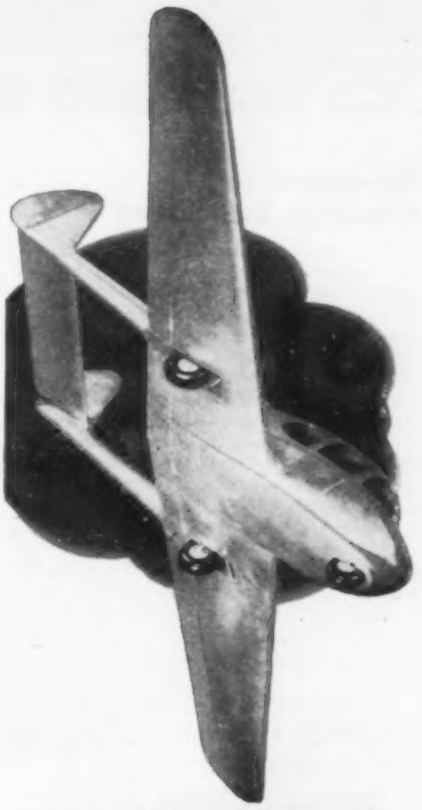
Not so many years ago Capt. D. W. Tomlinson, familiarly known as "Tommy", could be seen around the local airport, wearing those big boots of his after a stratosphere experiment. Now he's back on leave from duties with the Naval Air Transport Service at Pearl Harbor. His story of landing a plane on Okinawa just fifteen minutes after a Jap strafing attack, which was followed by another immediately upon his leaving, is only one of the many he's permitted to tell of his perilous flying in the Pacific.

The Society of Automotive Engineers met at the Continental last month with postwar air transport development as the theme of this sectional meeting. Approximately 200 engineers from airlines and aircraft manufacturers were present.

The Chamber of Commerce's first flight scholarships were awarded to eleven high school youths, 15 to 18 years of age. Each scholarship entitles the holder to eight hours of dual flight instruction at either two local CAA-approved institutions: "Smitty's" Kansas City Flying Service or Charlie Toth's flight school.

Stan Johnson of Continental Air Lines flew in from Denver to be guest speaker at the June dinner of the Kansas City Unit, WNAA, on the 13th—a lucky day for them. His subject covered the two secret weapons of the war and their effect on postwar commercial flying. You guessed it—jet-propelled planes and radar. Versed in his subject, and brimming with good humor, Johnson wondered why folks go around talking about the "coming air age"—when it's here! The Kansas City Unit also had installation of its new members that evening, two of whom were the daughters of the well-known Lou Holland, sometimes referred to as the "father" of aviation in this city.

The WASP may have been deactivated but the flying gals who returned are going right



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MUSTANG FIELD
NW Hwy. and Abrams Rd., P. O. Box No. 598—SMU

on with their piloting. You can see Francie Meisner and Jane Emerson down at Muny almost every day.

And spruced up the city, 'cause it was to be "General Ike" day on the 21st.

Foundation for Air Education Established

A non-profit foundation, Air Education, has been organized to stimulate a comprehensive, co-ordinated program of education in the aeronautical arts and sciences, according to A. J. Stoddard, superintendent of Philadelphia public schools and chairman of the foundation's board of trustees. The three major objectives of the foundation are to interpret the technical development in aviation and educate people to utilize the air most extensively; reduce the time span between technical development of air transportation adoption of this medium in various social and economic areas of life; and to create an air-minded American citizenry. A tentative five-year program for Air Education, starting January 1, 1946, calls for publication of educational material for school teachers and textbook writers and experiments in teacher-student air trips.

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